COMPARISON OF EFFECTIVENESS OF JACOBSON'S PROGRESSIVE MUSCLE RELAXATION (JPMR) AND EMOTIONAL FREEDOM TECHNIQUE (EFT) IN PAIN AND SYMPTOM DISTRESS MANAGEMENT AMONG ONCOLOGY PATIENTS

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BY

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(MAY, 2021)

DECLARATION

I declare that the dissertation entitled "**COMPARISON OF EFFECTIVENESS OF JACOBSON'S PROGRESSIVE MUSCLE RELAXATION (JPMR) AND EMOTIONAL FREEDOM TECHNIQUE (EFT) IN PAIN AND SYMPTOM DISTRESS MANAGEMENT AMONG ONCOLOGY PATIENTS**" has been prepared by me under the guidance of **Dr. Bholeshwar Prasad Mishra**, Professor & Head, Department of Clinical Psychology, Dayanand Medical College and Hospital, Ludhiana. No part of this dissertation has formed the basis for the award of any degree previously.

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Dedicated

to

my Family

&

Teachers

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ABBREVIATIONS

ALL	Acute lymphocytic leukemia
BPI	Brief Pain Inventory
CAM	Complementary And Alternative Medical
EFT	Emotional Freedom Technique
GDI	Global Distress Index
JPMR	Jacobson’s Progressive Muscle Relaxation
MSAS	Average Symptom Distress
MSAS PHY	Physical Symptom Distress
MSAS PSY	Psychological Symptom Distress
NCCN	National Comprehensive Cancer Network

ABSTRACT

Introduction: Studies have shown that cancer treatments such as chemotherapy can cause side effects like pain, tiredness, nausea and vomiting etc. leading to distress among patients. Pain is a common accompaniment to childhood cancer. Behavioural interventions including relaxation therapy, hypnosis, cognitive-reappraisal techniques, visual imaging, and self-hypnosis have shown to improve the management of cancer pain and distress. (Ward, 2008). EFT has been shown to be effective in management of psychological disorders such as depression, anxiety, fear, guilt, and insomnia in patients with cancer and also provide physical relief. (Kalla M, 2018).

Aim of Study: 1. To study symptom distress and pain experienced by the children undergoing treatment for cancer. 2. To study the effectiveness of psychological interventions, Jacobson's Muscle relaxation (JPMR) technique and Emotional Freedom Technique (EFT) in management of pain and symptom distress.

Materials & methods: Study was conducted on OPD & IPD paediatric oncology patients of 7 to 18 years from August 2020 to January 2021 at Paediatric oncology unit, department of Paediatrics, DMCH, Ludhiana. Evaluation was done using Brief Pain Inventory (Short Form) and The Memorial Symptom Assessment Scale – Short Form (MSAS-SF).

Results: Results on a sample of 30 (15 in EFT group and 15 in JPMR group) showed that there was a significant difference between EFT and JPMR after pre- and post-intervention on pain severity, pain interference, physical symptom distress, psychological symptom distress and global distress index with EFT showing greater significant difference. Correlation was found between age and pain severity, age and pain interference, pain severity and pain interference, pain severity and symptom distress and pain interference and symptom distress.

Conclusion: Based on the present study, we concluded that EFT and JPMR both are effective in pain and symptom distress, with EFT showing a greater significant difference.

Clinical Significance: Effectiveness of psychological interventions in helping with pain and symptom distress management.

Keywords: Emotional Freedom Technique (EFT), Jacobson's Muscle relaxation technique (JPMR), distress, pain, paediatric oncology.

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INTRODUCTION

CANCER

Cancer can occur in any part of the body at any organ system. It is also characterised by an abnormal proliferation of cells which can be uncontrollable at times. Cancer is also considered as a genetic defect at the individual cell level. Cancer can occur prominently when a cell's genetic instructions permit growth without the mechanism of normal growth. This results to aberrant progeny by the cell, where and when is shouldn't. The Cancer's manifestations relate closely to its organ of origin. For Instance, a group of cancers of the bone marrow, commonly refers to leukemias, manifest as blood disorders cell production like anemia, bleeding or tendency to fever and infection.[1]

Types of Cancer

There are different types of Cancer. On the basis of kind of tissue in which it develops, broadly there can be classification of Cancer into five types (Tortora & Derrickson, 2009; Williams, 1990)

1. Carcinomas, also specified as malignant neoplasms in skin cells and the body organs linings, like respiratory, digestive and reproductive tracts. A large percentage of around 85% of human cancers are carcinomas.
2. Melanomas or neoplasms of a unique type of skin cell produces skin pigment known as melanin.
3. Lymphomas, or lymphatic system cancer.
4. Sarcomas, also regarded as malignant neoplasms of the bone, muscle or connective tissue.
5. Leukemias or cancers of the blood forming organs, like bone marrow, which often lead to white blood cells proliferation in extremity.

An important characteristic of cancer cells is that they do not adhere to each other as strongly as normal cells do (AMA, 2003; Williams, 1990). As a consequence, they might separate and easily spread to the different parts of the body via lymph systems or blood. This cell migration is commonly known as metasis, as is the new neoplasm

(metastases is the plural). As there is growth in tumor or neoplasm, it has to eventually arrange its own blood supply for nutrients, a process known as angiogenesis.

THE PREVALANCE OF CANCER

In the year 1991, it was assessed that there were 6 million fresh cancer cases every year in the world, and around one-tenths of the death are caused by cancer every year. In 1989, Cancer was found to be the 2nd major leading cause of death in UK. Whereas Cancer was reported to have 24 percent of all deaths in England and Wales in 1984 (Smith and Jacobson 1989). The main causes of cancer mortality among men in England and Wales are lung cancer (36%), Colorectal cancer (11%), Prostate Cancer (9 %); among women are breast Cancer (20%), lung cancer (15%), Colorectal cancer (14%), Ovarian Cancer (6%), Cervical Cancer (3%). Over the past few years, there has been a high surge of lung cancer deaths in women. However, the overall number of deaths due to cancer is not significantly rising.

Cancer is regarded as the deadly disease which is the prominent cause of death in children. Approximately 12,500 Children are diagnosed with cancer in the United States annually who are under the age group of 20. Around 11,000 children are under the age of 15. (National Cancer Institute, 2013b), with the most common types of cancer in children, as leukemia (blood cell cancers, 37%) brain and other central nervous system (CNS) tumors (25%) and Lymphomas (24%; Ries et al., 1999). These cancers are not similar to those found typically in the adults, in whom carcinomas are found to be most common. (Ries et al., 1999).[2]

Prognosis and Causes of Cancer

The prognosis of cancer is dependent on its diagnosis time line along with its location. (ACS, 2006; Williams, 1990). Cancer is caused by the interplay of genetic, environmental and behavioural and psychosocial factors (Foulkes, 2008). Environmental factors constitute of ultraviolet radiation, and household and worksite chemical hazards. Behavioural or lifestyle factors include smoking, diet, obesity and physical activity. Research has also found a connection between certain viral infections

and the development of certain cancers, such as in the cervix and in the liver (Tortora & Derrickson, 2009; Williams, 1990).[1]

PEDIATRIC CANCERS

Pediatric Cancers are found rarely, which accounts for less than 2% of all malignancies. Still Cancer is recorded as second leading cause of death in children. In the United States, 6550 new cancer cases are recorded of age group under 15 years which occur yearly (Young, Ries, Silverberg, Horm & Miller, 1986). Only 1 in 600 have the risk of developing cancer up to the age of 15 years.

Due to the advanced treatment of cancer in children, there is a surge of cure rates of 60%. Hence 1 out of each 1000 adults at age 20 is a survivor of childhood cancer. (Meadows, Krejmas, & Belasco, 1980).[3]

Incidence of Cancer in children under 15 years of age is between 38 and 124 per million annually. Since there is no organised Paediatric solid tumours registry in India; hence, robust epidemiologic data is not available for the country. All quoted data is currently based on population-based cancer registries across India under the National Cancer Registry Program.

Cancer is suspected by the Physicians when there is a constellation of symptoms that suggest the diagnosis. Children suffering from cancer may need to undergo surgery for diagnostic purposes (eg Tumour biopsy) or for treatment (i.e tumour excision). Paediatric solid tumours are considered as a highly diverse group of diseases with different biologies and behaviours and a substantial proportion consists of characteristic entities that are rarely seen in adults.

International Classification of Childhood Cancer, Third Edition (ICCC-3) contains 12 main diagnostic groups:

I. Leukemias, myeloproliferative diseases, and myelodysplastic diseases
II. Lymphomas and reticuloendothelial neoplasms
III. CNS and miscellaneous intracranial and intraspinal neoplasms
IV. Neuroblastoma and other peripheral nervous cell tumors
V. Retinoblastoma
VI. Renal tumors

VII. Hepatic tumors
VIII. Malignant bone tumors
IX. Soft tissue and other extraosseous sarcomas
X. Germ cell tumors, trophoblastic tumors and neoplasms of gonads
XI. Other malignant epithelial neoplasms and malignant melanomas
XII. Other and unspecified malignant neoplasms

All of the groups except retinoblastoma are split into subgroups, and the most heterogeneous subgroups are in turn split into divisions. The pediatric solid tumors comprise of group III to XII. Group III and VIII requiring specialized orthopedic and neuro-surgery and neuro-radiation expertise are considered separately.

Acute lymphocytic leukemia (ALL) is the most common cancer in children; approximately 30% of the malignant tumors in children are acute leukemia, and 75% of them are ALL. In Colombia, the incidence rate (IR) for paediatric cancer and for acute leukaemia is 141.2 and 60.1/per year/million people, in children younger than 15 years, respectively. There are approximately 2000 new paediatric cancer cases every year, and 800 of those are ALL.[4]

Children with leukemia may also at times suffer pain in bone, due to expansion of the bone marrow filled with leukemia cells. In contrast, solid tumors are tumors which occur in an organ system or soft tissue and cause harm by excessive local growth or by metastasis. Brain tumors, for instance, cause symptoms based on the specific site of the tumor. Symptoms may include headache and vomiting, changes in personality or cognitive function or motor control, or other neurologic changes. Other solid tumors may present as a growth ("mass"), which may be visible or may cause pain or some change in function. Solid tumors also may cause vague systemic symptoms such as malaise, weight loss, and fever. Most adults seem to adhere well to cancer regimens, but adolescents and minority group individuals from the lower classes do not (Nehemkis & Gerber, 1986; Tebbi et al., 1986). Adherence to medical regimens depends on and affects psychosocial factors in patients' lives.

Schedules of Treatment and Natural History of Cancer [3]

After diagnosis, treatment is started as soon as possible. Cancer is invariably fatal if it goes untreated. The goal is to obtain a remission; for almost all paediatric patients' remission is a realistic goal. Further therapy to consolidate and maintain remission until planned treatment is completed follows. Fortunately, most children with cancer respond to initial therapy, but disease progression in the face of apparently appropriate therapy may occur; this usually portends a poor outcome. Relapse is the recurrence of disease during or after therapy. In general, no relapse is good; however, most cancers will respond to treatment for relapse and some patients may be cured after relapse.

Treatment Plan for Leukemia

The initial phase of treatment is called induction, indicating that treatment is planned to induce a remission or obtain a state of no obvious disease. Remission is defined as having a blood count appropriate for the treatment received, a normal bone marrow, and a spinal fluid which shows no leukemia cells. Remission implies that although there is no obvious disease, microscopic disease still exists; thus, further treatment is required. For virtually all childhood cancers, the natural history of the illness has demonstrated that this is so. Most leukemia treatment plans include consolidation treatment, which means that more treatment is used to consolidate the remission. Consolidation therapy generally includes specific treatment designed to prevent the occurrence of central nervous system (CNS) disease. Thereafter, maintenance treatment continues for 2 to 3 years.

Treatment Plan for Solid Tumors

For solid tumors, therapy includes local control and systematic treatment. Local control is the eradication of the tumor in its initial site; systemic therapy is treatment to prevent metastases. The initial therapy is to do Local control with a complete surgical resection of tumor. If the tumor cannot be removed totally or is not removed then, the next step is treatment designed to decrease the size of tumor and to prevent the spread or reduce the size of metastases if they exist, before attempting definitive local control with surgery or radiation. For most solid tumours,

surgery and/or radiation is required for local control. After local control is accomplished, chemotherapy maintenance is resumed to obliterate micro metastases.

Some tumors need time frame of 2 years of therapy while others are treated for as little as few months. The length of treatment is determined by the natural history of the tumor and results from experience treating previous patients. The aim of therapy is to eradicate all tumor, visible and microscopic, so that when treatment is completed, the patient remains in remission.

Hospitalized children typically experience a multitude of acute pain stressors, in addition to surgery-related pain. Children who are hospitalized for nonsurgical reasons may suffer disease-related pain which is also insufficiently managed. These children may have to undergo other painful perturbations in the course of their diagnostic evaluation and/or medical treatment. The child whose current level of pain has not been adequately addressed may have reduced tolerance to cope with new perturbations and thus respond with what may seem like inappropriately severe distress and lack of self-control.

Pain [5]

Pain may be understood as a complex interplay of biological, cognitive, developmental, situational, and affective factors. The adequate evaluation and management of pain in children requires an understanding of how these factors interact for an individual patient. Age, context, and cultural factors moderate the relationship between sensory aspects of the pain experience and the child's emotional response to and behavioural expression of pain. As the child matures and experiences more pain, significant individuals in the environment provide feedback to the child in response to the child's pain behaviours, and this feedback modifies further the child's expressions of personal distress and pain (Zeltzer, Anderson, & Schechter, 1990).

It is estimated that one third of all cancer patients suffer from moderate-to-severe pain related to their cancer and over 50% of patients diagnosed with cancer suffer from some type of pain (Van den Beuken-van Everdingen et al., 2007). The most common types of pain

related to cancer are due to the cancer tumor and the treatment for it. Unlike those who suffer from chronic pain, cancer pain sufferers often experience pain in more than one area; the pain can be both acute and chronic and often varies in presentation (McGuire, 1989). Pain is associated with changes in psychosocial relationships, decreased quality of life, and increased rates of depression and anxiety (Godfrey, 2005; Syrjala & Chapko, 1995). Unfortunately, patients and providers often find that pharmacologic therapy does not fully control pain associated with cancer. Pharmacologic management of pain often has associated side effects such as nausea, constipation, drowsiness, pruritus, sedation, and delirium (National Comprehensive Cancer Network [NCCN], 2009).

Therefore, complementary and alternative medical (CAM) therapies, including mind–body techniques, are often sought out (Barnes, Bloom, & Nahin, 2008). Mind–body therapies are recommended in addition to pharmacologic approaches for cancer patients experiencing pain (American Cancer Society [ACS], 2009; NCCN, 2009). The American Cancer Society issued a report in 2008 revealing the percentage of use of CAM therapies obtained from over 4,000 cancer survivors 10–24 months after their diagnosis. The CAM therapies most frequently reported were prayer/spiritual practice (61.4%), relaxation (44.3%), faith/ spiritual healing (42.4%), nutritional supplements/vitamins (40.1%), meditation (15%), religious counselling (11.3%), massage (11.2%), support groups (9.7%), and guided imagery ([GI] 9.1%; Gansler, Kaw, Crammer, & Smith, 2008).

Pain and Emotion [1]

Pain and emotion are closely related, and cognitive processes mediate this link. Most people with chronic pain experience high levels of acute depression, anxiety, or anger (Gatchel et al., 2007). Emotions are also related to other kinds of pain, but the degree to which emotions cause the pain is still in question (Gatchel et al., 2007). Pain is itself very stressful, and many people with chronic pain consider their discomfort—the actual pain and the physical limitations it produces—to be the most prominent stressor in their lives (Gatchel et al., 2007;

Turner, Clancy, & Vitaliano, 1987). Health psychologists who work with patients suffering from pain often try to assess how well they cope up with their pain. Some of the more common coping methods adults and children with chronic pain use include hoping or praying the pain will get better someday and diverting their attention, such as by counting numbers or running a song through their heads (Gil, Wilson, & Edens, 1997; Keefe & Dolan, 1986). These approaches are not very effective in reducing chronic pain.

People whose pain has ended show substantial reductions in various measures of psychological disturbance (Melzack & Wall, 1982). Depression being the most common, and two factors are involved. One factor is the stress these people experience without being able to change their situations (Anderson et al., 1985; Turk & Holzman, 1986). They develop a sense of helplessness, which leads to their depression. The other factor is that they may begin to *catastrophize*, or have frequent, magnified negative thoughts about their plight, which women are found do more than men (Edwards et al., 2004; Holtzman & DeLongis, 2007; Turk, 2001). Pain affects the body and is affected by maladjustment, but chronic pain is more likely to lead to maladjustment than the other way around.

PAIN IN CHILDREN

Children experience almost all of the types of discomfort and pain syndromes that adults have (Gibson & Chambers, 2004; McGrath & Hillier, 1996).

Better evidence that babies perceive pain comes from studies with new born as they underwent medical procedures, such as when the foot is pierced to draw a blood sample. One of these studies found that babies' reactions to the noxious stimulus included a ''pain'' facial expression: they had their eyes squeezed, brows contracted, tongue taut, and mouth open (Grunau & Craig, 1987). This pattern is comparable to the expression adults display when in pain. Another study found that new born crying varied with the intensity of the noxious procedure (Porter, Miller, & Marshall, 1986). Highly noxious

procedures elicited cries with certain characteristics, such as relatively high-pitched peak tones, that adults judged as indicating ‘‘urgency.’’[1]

One hinderance young child has towards his expression of the experience of pain is that their language ability is somewhat limited. Toddlers may know the words ‘‘hurt,’’ ‘‘ouch,’’ and ‘‘ow,’’ but they do not usually have many other words to describe their pain (McGrath & Hillier, 1996; Stanford, Chambers, & Craig, 2005). Instead of telling adults of their pain, children may show other pain behaviours, such as crying, rubbing the affected area, or clenching their jaws. By 13 years of age, children use about 26 words to describe their pain (Jeans, 1983).

School-Aged Children: At roughly 7 to 8 years of age children, begin to understand the quality of pain.[6] Self-report visual analogue and numerical scales are effective in this age group. A few pain questionnaires have also proven effective for this age such as the paediatric pain questionnaire and the adolescent paediatric pain tool.[7]

Adolescents: Adolescents often have the tendency to minimize or deny their pain, especially in front of friends, so it is important to provide them with privacy and choice. For example, they may or may not like to have their parents present. They expect developmentally appropriate information about procedures and associated sensations. Some adolescents regress in behaviour under stress.[8] They also need to feel able to accept or refuse strategies and medications to make procedures more tolerable.

Guidelines for pain management in cancer survivors:

A large number of disease-free cancer survivors learn to live with pain or neuropathies brought by treatment or by the cancer itself. Sometimes these conditions resolve over time, but irreversible damage to tissue and nerves can cause pain and neuropathy to progress and persist indefinitely. Because health care professionals may not recognize these as delayed problems or know how to identify those at greatest risk, many of these conditions at times go undiagnosed and untreated. Most chronic pain syndromes and neuropathies experienced by disease-free survivors of cancer originate from:

o an injury to peripheral nerves from surgical trauma,

o neurotoxicity of chemotherapeutic agents

o radiation-induced damage to nerves

Other sources of persistent or intermittent pain include:

i. myofascial pain dysfunction syndrome, which is characterized by trigger points in muscle or at the junction of muscle and fascia that refer pain to other areas of the body, and which is associated with breast, thorax, and head and neck surgery in cancer survivors.
ii. fistula formation following pelvic surgery.
iii. chronic inflammation, such as radiation-induced enteritis or proctitis.
iv. osteoradionecrosis, a radiation-induced demineralization and vascularization of the bone.
v. Persistent nerve damage from tumour infiltration of nerves.

TREATMENT:

Anticonvulsants, tricyclic antidepressants, and opioids can be highly effective for alleviating neuropathic pain. Novel pharmacologic agents such as neuroprotective compounds e.g. amifostine, glutamine, and glutathione and neurotrophic factors (such as nerve growth factor) can also be effective. Vitamin E has shown some promise in prophylaxis of 66 chemotherapy- induced peripheral neuropathy with cisplatin and paclitaxel. Less is known about nonpharmacologic and alternative therapies.[9]

Before the 1980s, pain management tended to be chaotic and ill-thought through. The World Health Organisation sought to improve the delivery of analgesia by clarifying and simplifying it. They did this by means of the concept of the ‘Pain Ladder. While this was established and validated in adults, the principles on which it was based can be applied to children. They are:[10]

As pain increases in severity, more powerful analgesia should be offered.

There is no advantage in exchanging one analgesia another of similar type and potency. If a previously useful analgesic becomes inadequate, either the dose should be reviewed or a more powerful drug should be substituted.

- The simplest medication and the oral route should be selected wherever possible.
- Adjuvant therapy (that is, medications that are not usually considered to be analgesics but which become analgesic in certain situations) should be used as soon as a specific diagnosis of pain is made. This means, for example, that NSAID therapy should be instituted as soon as a diagnosis of bone pain is made, rather than waiting until other measures have failed.
- Opioid medication should be given regularly and never only “as needed.”
- Breakthrough medication should remain a fixed proportion of the regular medication and always be prescribed simultaneously.

Step 1 (Simple Analgesia)

In paediatrics, the only simple analgesia widely available is paracetamol. In palliative situations, it may sometimes be appropriate to consider using aspirin which is a powerful anti-inflammatory, antipyretic and analgesic.

Step 2 (Minor Opioid)

Minor opioids include codeine, dihydrocodeine and dextropropoxyphene. These are often conveniently combined with paracetamol. This may improve compliance but imposes a ceiling dose as there is a maximum safe daily dose of paracetamol. In practice, the middle step (minor opioid) is probably not necessary in children. There is no difference in effect between a large dose of a minor opioid and a small dose of a major opioid. Even in adults there is considerable overlap; in children who are resistant to the effects of opioids and who clear them very quickly, it is often justifiable to go straight from simple analgesia (step 1) to a small dose of a major opioid (step 3).

Step 3 (Major Opioid)

It is the third step in which there is most variety. Morphine is the archetype major opioid and is both effective and relatively non-toxic. Unlike many opioids, the pharmacology of morphine has been studied in children with cancer. [11-13]

Rather than being seen as contradictory to the WHO approach [14] P(N) CA should properly be seen simply as another route that can be used to deliver the WHO approach. It offers advantages of convenience and immediacy that, for most children, largely offset the need for additional needles and equipment. If P(N) CA is used, it is critically important that background and breakthrough doses are adequate, and in line with correct use of opioids in palliative care. Otherwise, there is a risk that children will need to experience pain before they can access analgesia, in contravention of the WHO guidelines.

DISTRESS

Distress implies to mental or physical strain imposed by pain, trouble, worry, or other stressors. 16 Numerous stressors, such as frequent hospitalization, repeated intrusive procedures, and extensive chemotherapy, can activate both psychological and physiological responses that may result in distress in children with cancer. This distress may be experienced as an extensive range of feelings such as dependency, immobility, vulnerability, apprehension, anger, and other anxiety states. Children who perceived more frequent and intense cancer stressors experienced higher levels of anxiety and lower levels of self-esteem.

Procedural Distress

A significant paediatric oncology research area deals with measuring the degree of distress in children who undergo medical procedures (e.g., bone marrow aspirations [BMA] or lumbar punctures).[15-17] This is a legitimate research area given that children find procedural and investigational aspects of cancer treatment to be worse than the disease itself.

Furthermore, there is evidence in the literature that adolescent survivors of childhood cancer reported they would refuse treatment if their cancer reoccurred because of the painful treatments.[18]

These findings reinforce the distress experienced by children and adolescents undergoing medical procedures. For the most part, the main research focus of paediatric cancer procedural distress concerns quantifying the amount of distress experienced. Distress that

encompasses both pain and anxiety is often measured using behavioural rating scales that operationally define distress-related verbal and nonverbal behaviours. Findings from studies investigating procedural pain reveal a significant relationship between age, quantity, and type of distress-related behaviour.[19]

Children younger than 7 years old have exhibited more expressive, action-oriented behaviours, whereas children older than 7 years have shown more control over their physical and emotional reactions to pain. Although these findings suggest some qualitative and quantitative differences in distress-related behaviours for various age groups of children, the results do not necessarily indicate that younger children experience more distress than older children. Younger children may simply manifest more intense overt behaviour in comparison to older children in response to aversive stimuli.[20]

Treatment Distress

Treatment for childhood cancer may involve chemotherapy, radiotherapy, and surgery. The focus on measuring symptom occurrence and distress related to treatment focuses on the side-effects of chemotherapy and, more specifically, nausea and vomiting. These two symptoms have primarily been evaluated in relation to the side effects of chemotherapy and efficacy of antiemetic agents and/or nonpharmacological measures (e.g., hypnosis) to reduce nausea and vomiting. Most notable is the work by Le Baron et al who undertook a series of assessment and intervention studies focusing on nausea and vomiting. One of their studies investigated whether children (5 to 18 years old) could use a self-report rating scale to quantify somatic symptoms (i.e., nausea and vomiting) in a series of vignettes.[21]

Adjustment-Related Distress

In addition to the medical procedures and side effects of treatment, other potential stressors identified in the literature (e.g., changes in appearance, interference with activity, peer rejection, integration in school, family support, and relationships) are believed to impact children's adjustment to cancer. Adjusting to cancer may be manifested through a variety of distressing responses (also referred to as

psychosocial problems or psychological symptoms or psychological distress) such as anxiousness, loneliness, sadness, depression, and fear.[22-24]

There is also a lack of empirical work examining the meanings children attribute to treatment-related symptoms and the possible distress associated with these symptoms. One notable exception is an ethnographic study that described children's (7 to 17 years old) perceptions of chemotherapy induced alopecia.[25]

Chemotherapy & Distress

Developed and disseminated by the NCCN, the Distress Management Clinical Practice Guideline (DM-CPG) addresses a range of relevant considerations for psychologists working with individuals diagnosed with cancer.[26-28] The DM-CPG specifically concerns the identification and treatment of psychosocial and emotional problems among individuals diagnosed with cancer. One foundational element of the DM-CPG involves its focus on distress, rather than other psychologically oriented terms like depression or anxiety.

As Per the DM-CPG, "Distress is a multifactorial unpleasant emotional experience of a psychological (cognitive, behavioural, emotional), social, and/or spiritual nature that may interfere with the ability to cope effectively with cancer, its physical symptoms and its treatment.[29]

Smeltzer CS et al (2008) explained the various treatment modalities for cancer includes chemotherapy, radiation therapy, immunotherapy and so on.

The backbone of most cancer treatment programs is chemotherapy, because medication given systemically can fight the cancer at the site of its origin and throughout the body. Most chemotherapeutic agents work by preventing division or growth of rapidly growing cells. Some chemotherapy is given by vein, some by mouth, or some by injection into a muscle or directly into the spinal fluid.

Chemotherapy is the use of antineoplastic agents to help tumour cell death by interfering with cellular functions and division. Although chemotherapy is an important treatment modality it brings various side effects to patients who have cancer. The various side-effects of

chemotherapy are nausea & vomiting, pain, stomatitis, diarrhoea, constipation, alopecia, thrombocytopenia, leukopenia.[30]

The children's major landmarks (their body, their place in their family and in society, a sense of identity and of having a value, the meaning and value of their life) are more or less disturbed during the experience of cancer. Acute medical procedure pain and distress for children with cancer can be so extreme that some children deny further therapy because of the fear associated with the treatment, thus compromising their survival (Dolgin, Katz, Doctors, & Siegel, 1986).

Chemotherapy endangers fear and uncertainty for many patients, as it is generally associated with upsetting side effects and distress. However, the prevalence of distress during chemotherapy varies across studies. Some have found clinical levels of distress in around a quarter of patients (e.g., Mooray et al., 1991).

Sinsheimer and Holland (1987) found that psychological distress was largely associated with hair loss, weight gain and fatigue. Knobf (1986) found fatigue to be the most distressing symptom in this cancer group, and Nerenz et al. (1984) found nausea and vomiting, fatigue, weakness and pain to have the strongest associations with distress in a sample of patients with breast cancer and lymphoma. Some studies have also found that the number of side effects experienced by patients during chemotherapy to be associated with distress (e.g., Nerenz et al., 1984).

It is estimated that approximately 30% of cancer patients will develop anticipatory nausea, 80% will experience post-treatment nausea, and 55% will develop vomiting in response to cytotoxic treatments (Morrow et al., 2002).[3]

The Role of Psychology in Cancer [31]

A role for psychology in cancer was first suggested by Galen in 200–300, who argued for an association between melancholia and cancer, and also by Gedman in 1701, who suggested that cancer might be related to life disasters. Eighty-five per cent of cancers are thought to be potentially avoidable. Psychology therefore plays a crucial role in terms, attitudes and beliefs about cancer and predicting behaviours,

such as smoking, diet and screening which are implicated in its initiation.

The Psychosocial Factors in The Initiation and Promotion of Cancer [31]

Behavioural factors: Behavioural factors have been shown to play a role in the initiation and promotion of cancer. Smith and Jacobson (1989) reported that 30 percent of cancers are related to tobacco use, 35 per cent are related to diet, 7 per cent are due to reproductive and sexual behaviour and 3 per cent are due to alcohol. These behaviours can be predicted by examining individual health beliefs.

Stress: Stress has also been revealed to have a part to play in cancer. Laudenslager et al. (1983) described a study that involved exposing cancer-prone mice to stress (shaking the cage). They found that if this stressor could be controlled there was a decrease in the rate of tumour development. However, if the stressor was perceived as uncontrollable this resulted in an increase in the development. This advocates a role for stress in the beginning of cancer. However, Sklar and Anisman (1981) argued that an increase in stress increased the promotion of cancer not its initiation.

Life events: It has also been suggested that life events play an important role in cancer. A study by Jacobs and Charles (1980) examined the differences in life events between families who had a cancer victim and families who did not. They reported that in families who had a cancer victim, there were higher numbers who had moved house, higher numbers who had changed some form of their behaviour, higher numbers who had had a change in health status other than the cancer person, and higher numbers of divorces representing that life events may well be a factor contributing to the onset of cancer. Nevertheless, the results from a meta-analysis by Petticrew et al. (1999) do not support this proposition. They identified 29 studies, from 1966 to 1997, which met their inclusion criteria (adult women with breast cancer, group of cancer-free controls, measure of stressful life events) and determined that although several individual studies report a relationship between life events and breast cancer,

when methodological problems are taken into account and when the data across the different studies is merged 'the research shows no good evidence of a relationship between stressful life events and breast cancer.

Control: Control also seems to play a role in the initiation and promotion of cancer and it has been argued that control over stressors and control over environmental factors may be related to an increase in the onset of cancer.

Coping styles: Coping styles are also important. If an individual is exposed to stress, then the means they use to cope with this stress may well be related to the onset of cancer. For example, maladaptive, disengagement coping strategies, such as smoking and alcohol, may have a relationship with an increase in cancer.

Depression*:* Bieliauskas (1980) highlighted a relationship between depression and cancer and suggests that chronic mild depression, but not clinical depression may be related to cancer.

Personality: Over the past few years there has been some interest in the relationship between personality and cancer. Temoshok and Fox (1984) argued that individuals who develop cancer have a 'type C personality'. A type C personality is described as passive, appeasing, helpless, other focused and unexpressive of emotion. Eysenck (1990) described 'a cancer-prone personality', and suggests that this is characteristic of individuals who react to stress with helplessness and hopelessness, and individuals who repress emotional reactions to life events.

Hardiness*:* Kobasa et al. (1982) described a coping style called 'hardiness', which has three components: control, commitment and challenge. Low control advises a tendency to show feelings of helplessness in the face of stress. Commitment is defined as the opposite of alienation: individuals high in commitment find meaning in their work, values and personal relationships. Individuals high in challenge regard potentially stressful events as a challenge to be met with expected success. Hardiness may be protective in developing cancer.

Psychology and the alleviation of symptoms [31]

Psychology also has an important role to play in the alleviation of symptoms of cancer, and in promoting quality of life.

Pain management: One of the main roles of psychology is in terms of pain management, and this has taken place through a variety of different pain management techniques. For example, biofeedback and hypnosis have been proved to decrease pain. Turk and Rennert (1981) encouraged patients with cancer to describe and monitor their pain, encouraged them to develop coping skills, taught them relaxation skills, encouraged them to do positive imagery and to focus on other things. They reported that these techniques were successful in reducing the pain experience.

Social support interventions: Social support interventions have also been used through the providing of support groups, which emphasize control, meaningful activities and aim to reduce denial and promote hope. It has been suggested that although this intervention may not have any effect on longevity it may improve the meaningfulness of the cancer patient's life. In line with this, Holland and Holahan (2003) explored the relationship between social support, coping and positive adaptation to breast cancer in 56 women. The results showed that higher levels of perceived social support and approach coping strategies were associated to positive adjustment.

Treating nausea and vomiting: Psychology has also been involved in treating the nausea and vomiting experienced by cancer patients. Cancer patients are often offered chemotherapy as a treatment for their cancer, which can cause anticipatory nausea, vomiting and anxiety. Respondent conditioning and visual imagery, relaxation, hypnosis and desensitization have been shown to decline nausea and anxiety in cancer patients. Redd (1982) and Burish et al. (1987) suggested that 25–33 per cent of cancer patients show conditioned vomiting and 60 per cent show anticipatory anxiety. It is evident that relaxation and guided imagery may decrease these problems.

Body image counselling: The quality of life of cancer patients may also be improved through altered body image counselling, particularly

following the loss of a breast and more generally in dealing with the grief at loss of various parts of the body.

Cognitive adaptation strategies: Research also suggests that quality of life may also be improved using cognitive adaptation strategies. Taylor (1983) used such strategies to improve patients' self-worth, their ability to be close to others, and the improvement in the meaningfulness of their lives. Such methods have been recommended to involve self-transcendence and this has again been related to improvement in well-being and decrease in illness-related distresses.

PSYCHOSOCIAL INTERVENTIONS IN CANCER

In the early childhood years, victims of chronic illness may become excessively dependent if the parents are overprotective, for instance by not allowing an epileptic child to play in a wading pool with careful supervision. In later childhood and adolescence, chronically ill individuals may experience academic and social difficulties that impair their friendships, self-confidence, and self-esteem. Adults who develop a chronic condition may have difficulties if their illness leads them to stop working or change jobs, alter their parenting role, or change or stop their sexual relations. (O' Dougherty & Brown, 1990).[29]

A body of intervention literature has emerged, and the general topic of psychosocial interventions for individuals diagnosed with cancer has become a very popularly reviewed and debated topic with the general consensus showing a demonstrably positive effect of psychosocial interventions and their impact on psychosocial aspects of well-being as well as symptom management [32-35]

An important early area of accomplishment was establishing evidence-based interventions for pain from bone marrow aspirates, IVs, lumbar punctures, and chemotherapy-induced nausea, as well as for general symptom management. There are several common sources of pain (e.g., disease, procedural) that can affect children with cancer. Since the experience of pain commonly has biological, cognitive, and emotional components (Hilgard & Le Baron, 1984), psychologists have played a key role in alleviating suffering. Pain and distress are often intertwined as children undergo medical procedures such as bone

marrow aspirates and biopsies, insertion of “lines,” and invasive tests and examinations. A number of evidence-based behavioural and cognitive- behavioural interventions were established to reduce pain and distress and to facilitate coping during procedures, including distraction, relaxation, hypnotherapy, cognitive behavioural approaches, and treatment approaches that integrate psychological and pharmacologic interventions (Patterson & Jensen, 2003; Spirito & Kazak, 2006).

Psychosocial and behavioural interventions for individuals diagnosed with cancer is a popular topic of literature reviews, including a number of narrative.[36-43] Systematic and meta-analytic summaries of the literature. The vast majority of the reviews conclude that psychosocial interventions (individual, couple, or group format) targeting psychological distress demonstrate moderate levels of efficacy. [35,44-48]

Using the evidence that has emerged regarding psychosocial care in cancer, one clinical practice guideline has been developed which addresses distress management for individuals who are diagnosed with cancer.[49]

Redd et al. (2001) showed that behavioural intervention can effectively control anticipatory nausea and vomiting in adult and pediatric cancer patients undergoing chemotherapy; however, the evidence for the efficacy of behavioural intervention to control post-chemotherapy nausea and vomiting is less clear. Behavioural intervention integrating several behavioural methods can ameliorate anxiety and distress associated with invasive medical treatments. Although a variety of behavioural methods have been shown to reduce acute treatment-related pain, there is increasing evidence that these methods are not equally effective. Hypnotic-like methods, involving relaxation, suggestion, and distracting imagery, hold the greatest promise for pain management.[50]

Treatment programmes for children with cancer include many painful procedures, and parents commonly voice concern over the extreme anticipatory anxiety and behavioural distress exhibited by their children

before and during these procedures (Katz et *al.,* 1980; Jay *et al.,* 1983).

Recent reviews of research and practice related to paediatric pain call for studies that test interventions designed to reduce these children's distress and perceptions of pain (Beyer & Byers, 1985; Stevens *et al.,* 1987). Studies have been conducted that observe the responses of paediatric patients with cancer to interventions for painful procedures. These studies have reported such interventions to be effective in reducing children's distress (Kellerman *et al.,* 1983; Jay *et d.,* 1985, 1987; McGrath & de Veber, 1986).

Jacobson's Progressive Muscle Relaxation

Progressive muscle relaxation (PMR) is an empirically supported approach for relaxation. The American physician Edmund Jacobson developed PMR at Harvard University in 1908 first published his book Progressive Relaxation in 1929 (Jacobson, 1929). The technique was later abbreviated by Bernstein and Borkovec (1973), maintaining its effectiveness. The technique involves learning to monitor tension in specific muscle groups by first tensing and then releasing one muscle group at a time, in concert with diaphragmatic breathing (Kim, Na, & Hong, 2016). A "release only" modification of PMR is an option for individuals who have become familiar and comfortable with the full "tense and release" method. PMR is based on the premise that muscle tension is the body's response to anxiety, and that muscle relaxation with deep breathing reduces anxiety to a great level.

Jacobson's relaxation technique is a type of therapy that focuses on tightening and relaxing specific muscle groups in order. It's also known as progressive relaxation therapy. By concentrating on specific areas and tensing and then relaxing them, you can become more aware of your body and physical sensations. Relaxation techniques can help to decrease stimuli contributing to symptoms. Progressive muscle relaxation technique significantly reduces chemotherapy induced nausea and vomiting. Techniques involving relaxation are extensively used by people to decrease anxiety and cope with stress-related

problems. Relaxation therapy is initiated and taught to peoples but is practiced primarily in the client's own environment. As progressive muscle relaxation is found effective, safe, non- pharmacological, non-invasive, cost effective method in conditions like anxiety, depression, stress and pain.

PMR is an efficacious treatment for a range of populations and symptoms (Campos de Carvalho, Martins, & dos Santos, 2007; Carey & Burish, 1987; Isa, Moy, Razack, Zainuddin, & Zainal, 2013; Kim et al., 2016; Molassiotis, 2000; Parás-Bravo et al., 2017). Reviews of the efficacy of PMR for healthy older adults (Klainin-Yobas, Oo, Yew, & Lau, 2015) and individuals with severe psychological disorders (Vancampfort et al., 2013) have concluded that PMR can significantly reduce state and trait anxiety, depression, and psychological distress. A systematic review of PMR as an intervention for patients with cancer undergoing chemotherapy (Pelekasis, Matsouka, & Koumarianou, 2017) provided evidence that PMR reduces chemotherapy side effects, including nausea and fatigue.

Molassiotis A (2000) conducted a pilot study on eight patients on the effect of progressive muscle relaxation technique in the management of the post-chemotherapy nausea and vomiting in Chinese breast cancer patients. Results indicated that duration and intensity of nausea and vomiting were lower in the experimental group. Despite the small size the study shows progressive muscle relaxation technique as an effective adjuvant method to decrease nausea vomiting in chemotherapeutic.[51]

Progressive relaxation training alone can be effective in treating anxiety disorders and in some cases is as effective as exposure therapy. (Bernstein, Borkovec, & Hazlett-Stevens, 2000; Lukins, Davan, & Drummond, 1997; Öst & Breitholz, 2000.) It is used to treat a number of psychological and physical problems, including asthma, eczema (skin inflammation), headaches, hypertension, pain, side effects of chemotherapy, postsurgical distress, and insomnia. (Bernstein, Borkovec, & Hazlett- Stevens, 2000; de L. Horne, Taylor, & Varigos,

1999; McCallie, Blum, & Hood, 2006; Means, Lichstein, Eppereson, & Johnson, 2000).

Relaxation training is a widely used intervention with the chronically ill, including asthmatics, cancer patients and multiple sclerosis patients, among others. (Agras, Taylor, Kraemer, Southam, & Schneider, 1987).

Recent reviews have found relaxation training alone or with guided imagery given during chemotherapy generally reduced treatment-related symptoms and improved emotional adjustment and quality of life (Luebbert et al., 2001; Walker et al., 1999).

Emotional Freedom Technique

EFT (Emotional Freedom Technique) was developed from DR. Roger Callahan's TFT (Thought Field Therapy) by Gary Craig, who simplified and popularized EFT as a 'Do-it-yourself' method. EFT works on the understanding that emotional trauma contributes significantly to disease.

EFT has been found effective in widely different groups, including hospital patients, war veterans, victims of sexual violence, school children, college students, teachers, health care workers, cancer patients, athletes, presurgery patients, mothers, dental patients, psychotherapists, diabetics, and survivors of natural disasters.

Emotional Freedom Techniques (EFT), also known as tapping, is an energy psychology technique that combines stimulation of acupressure points on the face and upper body with exposure to a specific traumatic memory or trigger. EFT uses the meridian energy system of the body, similar to traditional acupuncture, but it differs in the way it is administered.[52] In traditional acupuncture, needles are used to stimulate the end points of meridians. In EFT, the subject gently taps acupressure points with his/her fingertips. While tapping on acupressure points, the subject also focuses on the emotions triggered by a stimulus (e.g. spiders, in the case of phobias), or a particular traumatic event, and voices statements of self-acceptance. EFT combines cognitive strategies with systems such as acupuncture which leads to a shift in the "cognitive, behavioral and neurochemical foundations of the psychological problem".[52]

EFT is a brief intervention combining elements of exposure, cognitive therapy, and somatic stimulation of acupressure points on the face and body. Participants typically identify a concern or issue they wish to address with the technique and rate their level of distress on a Likert-type scale out of 10 (10 is the maximum amount of distress and 0 represents the minimum or a neutral state). This is called a Subjective Unit of Distress (SUDS) scale and has long been used as a subjective measure of a participant's discomfort in therapy. Participants then state their concern in a "Setup Statement," which assists in turning them into their level of distress. This is typically stated in this format "Even though I have this problem (e.g. anger), I deeply and completely accept myself." The first half of the setup statement emphasizes exposure, while the second half frames the traumatizing event in the context of self-acceptance. The participant then engages in the somatic tapping process on acupoints on the body while they repeat a shortened phrase to stay engaged (e.g. feel angry). This is called the "Reminder Phrase." The tapping sequence uses 8 acupoints on the face and upper body and is normally repeated until the SUDS rating is very low (1 or 0).

A current research bibliography lists more than 100 studies published in peer-reviewed journals (Research.EFTuniverse.com). Its effectiveness outspreads across a wide sample of populations, including college students, veterans, pain patients, overweight individuals, hospital patients, athletes, health care workers, gifted students, chemotherapy patients, and phobia sufferers.

Similar to cognitive behavioral therapy, EFT's aspect of self-acceptance relies on the premise that acceptance, rather than resistance of a particular condition can reduce suffering. (Brattberg G. Self-administered EFT (Emotional Freedom Techniques).

In a randomized controlled trial by Stapleton P[53] et al. (2011), 37 of 96 overweight/obese adults, participants were allocated either to an EFT-based treatment or to a four-week waitlist condition. Compared to waitlist participants, the EFT group reported significant improvements in food cravings, craving restraint, and the subjective power of food.

Treatment time frames ranging from 15 minutes to ten 1-hour sessions have been successful. Studies have delivered EFT in a variety of formats, including online courses for weight loss and cravings (e.g., Stapleton et al) and self-administered EFT for fibromyalgia (Brattberg et al), via telephone sessions, in groups, and in individual counseling sessions. The range of populations, settings and delivery methods encompassed in these studies provides indication that EFTs effects can be considered generalizable.

EFT seems to decrease activity in the amygdala, which is part of the brain's arousal pathway. It is also considered to have effects on the body's physiology in relation to stress regulation, emotional intensity and neural transmission.[54]

When measured against the standards of the American Psychological Association's Division 12 Task Force on Empirically Validated Treatments, EFT is found to be an "evidence-based" practice for anxiety, depression, phobias, and posttraumatic stress disorder (PTSD).

HOW DOES EFT WORK?

EFT appears to affect the amygdala (stress center in the brain) and hippocampus (memory center), both of which play a role in the decision process when you decide whether something is a threat. EFT has also been shown to lower cortisol levels, which is the stress hormone. Too much cortisol can result in lowered immune function and ultimately affect our physical health (e.g., fatigue illnesses).Stimulation of acupoints like those used in EFT is believed to send a signal to the limbic or emotion system in the body and reduce its arousal.[54] EFT can also decrease activity in the amygdala, which is part of the brain's arousal pathway.[55] And studies with long-term follow-up points are showing the changes last over time, so there may be changes in the brain's neural pathways over time.[54]

In a study by Staepleon et al. (2016) on the lived experience of chronic pain and the impact of brief Emotional Freedom Techniques (EFT) group therapy on coping, Paired samples t-tests revealed a significant decrease in the severity (–12.04%, $p = 0.044$) and impact (–17.62%, p

= 0.008) of participants' pain from pretest to posttest, and a significant improvement in their overall psychological distress from pretest to posttest (–36.67%, $p < 0.001$). There was also a significant improvement in participants' depression (–29.86%, $p = 0.007$), anxiety (–41.69%, $p < 0.001$), and stress (–38.48%, $p = 0.001$) from pretest to posttest. A significant relation was found between pain and psychological distress.[55]

The basic principle of EFT is that all emotions and thoughts are forms of energy (Banerjee, Puri and Luqman, 2015). Positive and negative energy, has a very real physical manifestations that can affect all the body functions.

EFT is an energy meridian therapy as well as acupuncture, principally working directly on the body's meridian system. Analogy, meridian like a river. In emotional or physical problems as well as to impede the course of the river. Tapping on the meridian points sends kinetic energy to the system and liberate energy barriers that cover the energy flow thus restoring the balance of mind and body (Church, 2013).

Tapping made will stimulate the "electrically active cells" as the active centers consisting of a collection of active cells that exist on the surface of the body. Tapping in the EFT will cause the excitement of the transduction signals occurring in the biological process due to the stimulation at the main point of EFT. Signal transduction will then be stimulates the pituitary gland to secrete hormones endorphine (Rokade, 2011), these hormones would provide a calming effect and cause feelings of happiness. It is very significant in reducing the level of anxiety. Many clinical trials have proven that EFT reduces the emotional impact of memory and incidents that trigger emotional distress that leads to balancing the body quickly and speeds up healing (Banerjee, Puri and Luqman, 2015).

AIMS AND OBJECTIVES

1. To study the symptom distress and pain experienced by the children undergoing treatment for cancer.
2. To study the effectiveness of psychological interventions, Jacobson's Muscle relaxation technique and Emotional Freedom Technique in management of pain and symptom distress.

REVIEW OF LITERATURE

EFT STUDIES

In a study done by Sezgin & Özcan[56] (2004), EFT was compared with Progressive Muscle Relaxation (PMR) in the self-treatment of test anxiety with a group of adolescent students. Both groups showed a significant decrease in test-taking anxiety, but the decrease for the EFT group (mean pre-treatment score of 53.9 decreased to 33.9) was significantly greater than the decrease (56.3 to 44.9) for the PMR group ($p < .05$).

EFT (Emotional Freedom Technique) in Cancer Treatment & Cancer Pain Management: A case study by Gary Craig (2006) depicted that EFT affected seven cancer patients both with respect to their experienced pain as well as the cancerous process itself.

In a study by Gunilla Brattberg[57], *(2008),* a significant decrease in physical pain was found in an EFT trial of patients with fibromyalgia upon completion of the an 8-week EFT treatment program. A reduction in pain, stress and tension was also observed in the intervention group compared to the wait-listed group (P=.02).

Bair[58] (2008) et al. studied The heart field effect: Synchronization of healer-subject heart rates in energy therapy, subjects included those who sat within the 3- to 4-foot "strong" range of the independent variable, the healer's heart field, while performing self-application of WHEE (the wholistic hybrid derived from EMDR [eye movement desensitization and reprocessing], and EFT [emotional freedom technique]), a meridian-based tapping technique (n=50); and those who performed the same process beyond the 15- to 18-foot range of the healer's EM heart field (n=41). The dependent variables were heart rate, SUD, and POMS inventory. All subjects completed these measures within 1 hour. Study results showed statistically significant heart-rate synchronization with the intervention population.

The effect of a brief EFT (Emotional Freedom Techniques) self-intervention on anxiety, depression, pain and cravings in healthcare workers reflected that EFT provided an immediate effect on

psychological distress, pain, and cravings that was replicated across multiple conferences and healthcare provider samples. (Church, D., & Brooks, A. J., 2010).

A Pilot Study of the Effects of Emotional Freedom Techniques in Psoriasis, done by Hodge[59] et al. (2011) showed that psychological symptom severity (GSI) improved post-workshop, demonstrating both clinical (raw score) and statistical significance (-56.43%, p=.043). Improvements (T score) (-50.67%, p=.002) were sustained at three 3-month follow-up (-50.54%, p=.001; -38.43%; p=.002). Symptom breadth (PST) also improved post-workshop clinically (-49.24%, p=.005), and that improvement was sustained over time (-46.93%, p=.019). Skindex-29 scores indicated improvements in emotional distress (-41.56%, p=.002), symptoms (-49.05%; p=.001), and functioning (-58.31%; p=.001) post-workshop, with changes over time to -80.56% (p=<.001), -74.95% (p=<.001), and -89.99% (p=.001) respectively, and at 3 months.

Study done by Church D[60] et al. (2012) showed post test scores for all experimental-group participants improved to the point where all were nonclinical on the total score, as well as the intrusive and avoidant symptom subscales, and SUD (IES total mean pre = 36 SD ±4.74, post = 3 SD ±2.60, $p < .001$). These results are consistent with those found in adults, and indicates the utility of single-session EFT as a fast and effective intervention for reducing psychological trauma in juveniles.

A randomized controlled trial (RCT) undertaken by Church[61] (2012)et al. showed significant improvements in psychological distress symptoms and cortisol levels in 83 non-clinical subjects, who received one-hour long EFT sessions. The EFT group showed statistically significant improvements in anxiety (-58.34%, $p < 0.05$), depression (-49.33%, $p < 0.002$), the overall severity of symptoms (-50.5%, $p < 0.001$), and symptom breadth (-41.93%, $p < 0.001$). The EFT group experienced a significant decrease in cortisol level (-24.39%; SE, 2.62) compared with the decrease observed in the SI (-14.25%; SE, 2.61) and no treatment group (-14.44%; SE, 2.67) groups ($p < 0.03$). The

decrease in cortisol levels in the EFT group mirrored the observed improvement in psychological distress.

In a study conducted by Bougea AM [62] et al. (2013), on effect of the Emotional Freedom Technique on perceived stress, quality of life, and cortisol salivary levels in tension-type headache sufferers, the mean frequency of EFT performed by the subjects was 85 times (SD_18) during the two-month intervention period. The mean frequency of EFT was highly negatively correlated with the frequency of headaches (Pearson 0.780) and the intensity of headaches (Pearson 0.660); More specifically, the linear regression models indicated that applying the EFT technique 10 times per month decreased the headache frequency by 0.64 episodes per month (95% confidence interval [CI] .37, .91, *P* .001) and also decreased the intensity of the disease by 0.53 times (95% CI .22, .84, *P* .002).

Stapleton[63] et al. (2013) reported significant reductions found in depression measures, interpersonal sensitivity, obsessive compulsive, paranoid, and somatization ($p < 0.05$). A significant decrease in pre-treatment for up to 12 months of follow-up was found for depression, interpersonal sensitivity, psychotism, and hostility. Overall, the results indicate the role of depression, and other health conditions play a role in the successful maintenance of weight loss.

In a study by Stewart[64] et al. (2013), significant improvement was found in overall psychological health and physical functioning. There was a significant reduction in the mean scores from baseline to immediately post intervention ($p = 0.009$) and again at the 4 week follow-up ($p = 0.005$). The size of the immediate effect was sustained at follow-up ($p = 0.65$).

Study by Church[65] et al. (2014) revealed that anxiety and depression both reduced significantly, as did the breadth and depth of psychological symptoms. Pain decreased significantly during the intervention period (−41%, $p < .0001$). Subjects were followed up at three and six months, revealing significant relationships between PTSD, depression, and anxiety at several assessment points. At follow-up, pain remained significantly lower than at pre-test. The results

of this study are consistent with other reports showing that, as PTSD symptoms are reduced, general mental health improves, and pain levels drop.

Study done by Baker BS[66] et al. (2015), Emotional Freedom Techniques (EFT) to reduce the side effects associated with tamoxifen and aromatase inhibitor use in women with breast cancer: Statistically significant improvements in Total Mood Disturbance ($p = 0.005$; $p = 0.008$), and anxiety ($p = 0.003$; $p = 0.028$), depression ($p = 0.006$; $p = 0.020$) and fatigue ($p = 0.008$; $p = 0.033$) occurred at both 6 and 12 weeks, respectively, compared to baseline. In addition, mean fatigue interference and global scores, numbers of hot flushes and the hot flush problem rating score decreased at 6 and/or 12 weeks.

In a study done by Ortner[67] et al. (2014),EFT was shown to significantly reduce pain severity with effect maintained at one month; patients' ability to live with pain and negative thinking around pain was also significantly reduced; and improvement was maintained at one- and six-month follow-ups.

Study done by Babamahmoodi A[68] et al. (2015) on Emotional Freedom Technique (EFT) Effects on Psychoimmunological Factors of Chemically Pulmonary Injured Veterans showed that 8-week group sessions with emphasis on patient's respiratory, psychological and immunological problems in chemically pulmonary injured veterans improved mental health ($F=79.24$, $p=0$) and health-related quality of life ($F=13.89$, $p=0.001$), decreased somatic symptoms ($F=5.81$, $p=0.02$), anxiety/insomnia ($F=24.03$, $p<0.001$), social dysfunction ($F=21.59$, $p<0.001$), frequency and severity of respiratory symptoms ($F=20.38$, $p<0.001$), and increased lymphocyte proliferation with nonspecific mitogens Concanavalin A (Con A) ($F=14.32$, $p=0.001$) and Phytohemagglutinin (PHA) ($F=12.35$, $p=0.002$), and peripheral blood IL-17 ($F=9.11$, $p=0.006$). This study provides an initial indication that EFT may be a new therapeutic approach for improving psychological and immunological factors.

Study done by Atun Raudotul Ma'rifah[69] et al. (2015) aimed to discover the effectiveness of fingerhold relaxation and SEFT to pain

intensity of post caesarean section. The result showed that the correlation value of control group was 0,431 with R-Squere 18,6 %. Meanwhile, in experimental group with fingerhold relaxation, the correlation value was 0.671 and R-square value was 45%. Furthermore, the correlation value of experimental groups using SEFT was 0.874 and R square was 76%. In conclusion, SEFT is effective to decrease the pain on patient with post caesarean section. Therefore, nurses are required to help mothers to feel comfortable in controlling the pain of post caesarean section.

In another study by Rachel Rogers [70] et al. (2015), on Emotional Freedom Techniques (EFT) for Stress in Students, post-test stress symptoms in college students were reduced in the EFT group by 39.3% and in the sham acupressure group by 8.1% ($p < .001$), demonstrating that the stimulation of actual points is superior to sham points even when all other components of treatment remain identical.

A study done by Lee[71] et al (2015) revealed a comparison of Emotional Freedom Techniques–Insomnia (EFT-I) and Sleep Hygiene Education (SHE) in a geriatric population with Follow-ups at 5 and 9 weeks post test. EFT was superior to SHE for insomnia. The results were similar to those found in earlier studies evaluating EFT for insomnia.

In a study done by Church[72] et al (2016) participants in both the EFT and DB groups demonstrate significant posttest improvement in psychological symptoms and pain. Follow-up showed that both groups maintained their gains for pain, with EFT superior to DB, but only the EFT group-maintained gains for psychological symptoms (*p* _.001). Large EFT treatment effects were found, with a Cohen's *d* _ .9 for anxiety and pain, and *d* _ 1.1 for depression. Though EFT showed a greater trend for improved Range of motion in most dimensions of movement, changes were nonsignificant for most measures in all groups. Reductions in psychological distress were associated with reduced pain as well as with improved Range of motion.

Study done by Church D[73] et al. (2016) showed that EFT subjects had significantly reduced psychological distress (p G 0.0012) and PTSD

symptom levels (p G 0.0001) after the test. In addition, 90% of the EFT group no longer met PTSD clinical criteria, compared with 4% in the SOC/WL group. After the wait period, the SOC/WL subjects received EFT. In a within-subjects longitudinal analysis, 60% no longer met the PTSD clinical criteria after three sessions. This increased to 86% after six sessions for the 49 subjects who ultimately received EFT and remained at 86% at 3 months and at 80% at 6 months. The results are consistent with that of other published reports showing EFT's efficacy in treating PTSD and comorbid symptoms and its long-term effects.

Study by Stapleton[55] et al. (2016) Paired samples t-tests revealed a significant decrease in the severity (– 12.04%, p = 0.044) and impact (–17.62%, p = 0.008) of participants' pain from pretest to post test, and a significant improvement in their overall psychological distress from pretest to posttest (–36.67%, p < 0.001). There was also a significant improvement in participants' depression (–29.86%, p = 0.007), anxiety (–41.69%, p < 0.001), and stress (–38.48%, p = 0.001), from pretest to posttest. A significant association was found between pain and psychological distress.

Patterson[74] (2016) showed that nurse students experience a decrease in stress and anxiety feelings including somatic symptom degradation. Overall, the findings suggest that EFT can be an effective tool for stress management and anxiety in nursing students. Decreases in anxiety as measured on both the STAI and PSS were statistically significant (p=.05). For PSS, STAI state and trait data, the reduction in self-reported stress was statistically significant with a mean difference baseline to week 4. Qualitative data suggested that nursing students experienced a decrease feelings of stress and anxiety including a decrease in somatic symptoms.

Research Gaesser and Karan[75] (2017) states EFT participants (n = 20; M = 52.16, SD = 9:23) showed a significant decrease in anxiety levels compared with the control group with a medium to large effect sizes. Participants CBT (n = 21; M = 54.82, SD = 5.81) showed a decrease in anxiety but did not differ significantly from the EFT or control.

A qualitative study done by Kalla[76] et al. (2018) explored practitioners experiences of using EFT to support chronic disease patients, which indicated that while EFT was done, “many emotions” emerged and tapping on pain perception and negative emotions may increase the perceived intensity and limiting impacts of physical pain were recognized as a significant part.

A study done by Donna Batch[77] (2019) on Clinical EFT (Emotional Freedom Techniques) Improves Multiple Physiological Markers of Health, showed significant declines in Post-test, in anxiety (40%), depression (35%), posttraumatic stress disorder (32%), pain (57%), and cravings (74%), all P < .000. Significant improvements were found in RHR (8%, P ¼ .001), cortisol (37%, P < .000), systolic BP (6%, P ¼ .001), and diastolic BP (8%, P < .000). Positive trends were observed for HRV and HC and gains were maintained on follow-up, indicating EFT results in positive health effects as well as increased mental well-being.

In a study done by Hui-Yong Kwaka[78] et al. (2019) on effect of the Emotional Freedom Techniques on anger symptoms in Hwabyung patients: A comparison with the progressive muscle relaxation technique showed that EFT (n=15) and PMR (n=16) improved Hwabyung symptoms (13.95%and 11.46%, respectively), state anxiety (12.57% and 12.64%, respectively), and depression (32.11% and 18.68%, respectively) ($p<0.05$ for all). Trait anger improved in EFT group (13.4%, $p=0.004$). There were no significant differences between the groups ($p>0.05$) except for trait anger at post-treatment ($p=0.022$ for between group).

In a study done by Robin Bilazarian[79] (2020),The BEC technique of briefly holding a sequence of five acupoint positions while thinking of an emotional or physical pain, repeated six times (BEC-6), is described for self-administration over a virtual videoconference format. Participants reported intensity of their distress before and after each of three rounds of the BEC-6, using the subjective units of distress (SUDS) scale. Seventy-five conference members participated (average age 60, 92% female). For 39, pain was the presenting issue, with

average starting intensity 5.5 on a scale of 0-10. At the end of 3 rounds, average intensity was 1.56 (3.9- point or 70% reduction, $p<0.0001$). For 28 participants (72%), pain dropped below their typical pain range in this brief 90 second demonstration. Upsets, reported by 36 participants started at average current intensity of 6.1 and at the end of 3 rounds average intensity was 0.9 (5.2-point or 85% reduction, $p<0.0001$)).

JPMR STUDIES

Melzack and Chapman[80] (1973) showed that relaxation therapy is thought to affect this cognitive and emotional alteration thereby providing pain relief suggested that the distraction of attention from the painful site, the reduction of anxiety and the development of a sense of control over pain by means of relaxation therapy can help diminish the noxious feeling.

Thomas[81], in 1981 did a study on Effectiveness of relaxation training in reducing adverse reactions to cancer chemotherapy which indicated that patients in the relaxation training condition reported feeling less emotionally distressed and nauseated, and showed less physiological arousal following the chemotherapy infusion, than patients in the no relaxation training condition.

Study done by Standley[82] et al. (1982) found that relaxation also helps diminish muscular and mental tension thereby reducing sympathetic stimulation of the hypothalamus. This modulates endogenous opioid production in the nervous systems which in turn decreases propagation of pain impulses.

Turk and Rennert[83], (1981) studied Guided Imagery And Progressive Muscle Relaxation as a Cluster of Symptoms Management Intervention in Patients Receiving Chemotherapy. They encouraged patients with cancer to describe and monitor their pain, encouraged them to develop coping skills, taught them relaxation skills, encouraged them to do positive imagery and to focus on other things. They reported that these techniques were successful in reducing the pain experience.

Study done by Turner[84], (1982) on Relaxation and cognitive-behavioural therapy produced significant improvement in several

problematic areas for chronic back pain patients. Pain intensity decreased significantly pre- to post-treatment for patients in all 3 treatment conditions, but not the WL condition. Depressive symptoms and disability improved significantly in all conditions (including the waiting list) from pretreatment to post-treatment, with no statistically significant differences among treatments. At both follow-ups, all 3 treatment groups remained significantly improved from pretreatment, with no statistically significant differences between treatments.

Ceccio[85] et al (1984) studied post-movement pain, in the first 24 hours following hip-surgery in elderly patients. They reported significantly less pain in the group practicing jaw relaxation. Subjects who used the Jacobsons's Progressive Muscle technique when they were turned during the first 24 hours following sugery stated a statistically significant lower level of pain ($p<.05$) and distress ($p<.05$).

Study done by Levin [86] et al. (1987) on nursing management of postoperative pain: use of relaxation techniques with female cholecystectomy patients. The BRT group was significantly different from the CA group on a combined sensation and distress factor ($P = 0.011$). No significant differences were found among groups for doses of analgesics ($P = 0.068$) or postoperative hospital days ($P = 0.56$).

The use of distraction and imagery with children during painful procedures, study by Broome ME [87] et al. (1992), Pain ratings decreased scantly over time *(t* = 3.21, *P* = 0.008). No child chose a rating of 1 (or no pain) for any of the procedures. Pain rating scores for 12 of the 14 children who rated pain at all three visits decreased over time, while two remained the same.

Jennifer [88] in 1993 did a study on cognitive distraction and relaxation training for the control of side effects due to cancer chemotherapy indicated that Relaxation training patients reported less nausea prior to chemotherapy and exhibited lower systolic and diastolic blood pressures after chemotherapy than control patients.

In a study by Lekander M[89], et al. (1997), Relaxation training has also been found to lead to higher lymphocyte counts and higher white blood cell numbers even in cancer patients receiving myelosuppressive

therapy. After intervention, patients in the relaxation group showed a tendency towards higher white blood cell numbers as compared to the control group ($F(1,19) = 3.22$; $p = 0.09$). The relaxation group had significantly more lymphocytes ($F(1,18) = 9.35$; $p < 0.007$) and displayed a nonsignificant trend to higher numbers of monocytes ($F(1,18) = 3.11$; $p = 0.09$).

Good M[90] et al. (1999) conducted a research on relaxation therapy which has been shown to provide pain relief by decreasing anxiety, lowering muscle tension and distracting attention. Controlling for pretest sensation and distress, orthogonal a priori contrasts and multivariate analysis of covariance indicated that the three treatment groups had significantly less pain than the controls, ($P = 0.028$-0.000) which was confirmed by the univariate analysis of covariance ($P = 0.018$-0.000). Post hoc multivariate analysis revealed that the combination group had significantly less sensation and distress of pain than the control group on all post-tests ($P = 0.035$-0.000), and the relaxation and music groups had significantly less on all tests ($P = 0.022$-0.000) except after ambulation.

Kemper and Wornham[91] (2001) prospectively studied 70 paediatric patients (43 of them oncology patients) who were referred for complementary and alternative medicine use consultation as part of their treatment at an urban tertiary care teaching hospital in Boston, Massachusetts. The most frequent goals for complementary and alternative medicine use therapy were treatment of pain, nausea, insomnia, or agitation, and the most common complementary and alternative medicine use modalities employed included herbs, dietary supplements, diet and nutrition, biofeedback and massage. Several families also engaged in prayer or Reiki and other energy healing techniques or were interested in learning more about these.

Meta-Analytical Review By Karin Luebbert[92] (2001) showed the effectiveness of relaxation training among cancer patients in acute treatment in various empirical studies (e.g. Burish and Lyles, 1981; Morrow, 1986; Cotanch and Strum, 1987; Bridge et al., 1988). Qualitative reviews have been published focussing on the special use

of relaxation training in reducing the side effects of cancer treatment (Redd and Andrykowski, 1982).

Yoo HJ [93], et al. (2005) conducted a study to assess the effectiveness of progressive muscle relaxation training (PMRT) and guided imagery (GI) in reducing the anticipatory nausea and vomiting (ANV) and post-chemotherapy nausea and vomiting (PNV) of patients with breast cancer and to measure their effects on the patients' quality of life (QoL). Thirty breast cancer patients on chemotherapy were randomized to the PMRT and GI group and 30 to the control group. Before each of six cycles of adjuvant chemotherapy, each patient was administered a self-report Multiple Affect Adjective Checklist (MAACL), and incidents of ANV and PNV for the first three post chemotherapy days were recorded. All patients were administered the Functional Assessment of Cancer Therapy-Breast (FACT-B) at baseline and after 3 and 6 months. They found that the PMRT and GI group was significantly less anxious, depressive, and hostile than the control.

In a study by Kwekkeboom [94] (2010) performed in patients with different cancer types, PMR exercises were found to be more effective compared with routine care and general massage procedures among other interventions performed to decrease pain, fatigue, and insomnia. Greater change in pain intensity (Z¼_2.15, P < 0.05), greater change in pain-related distress (Z ¼ _1.82, P < 0.05), and greater perceived control over pain (Z ¼_3.02, P < 0.01) were reported with PMR compared to control.

Carvahlo CD[95], (2007) conducted a similar study in cancer patients receiving chemotherapy at saopaoul, Brazil. For nausea and vomiting, the Wilcoxon test indicated that changes were statically significant (Z= 4.729, p=0, and Z= 4.739, p=0 respectively). The results showed a reduction in the intensity of nausea and vomiting after progressive muscle relaxation, suggesting that relaxation can contribute to the control of nausea and vomiting in these patients.

Crowe[96] et al. (2008) did a systematic review while the administration of analgesics is an important part of nursing practice, non-pharmacological interventions for the reduction of post-operative

pain are slowly gaining popularity. Patient education, massages, music, guided imagery and relaxation therapy are being increasingly used by nurses in the post-operative setting to achieve more effective pain relief.

Hakam[97] in 2009 did Spiritual Emotional Freedom Technique intervention to reduce pain in cancer patients and the study showed that combination SEFT intervention and analgesic therapy was more effective than only analgesic therapy. SEFT can be employed for cancer patients to relieve their pain.

Chang[98] et al. (2012) review included six studies – five English-language papers and one Chinese-language paper. Meta-analysis did not show a statistically significant impact on the effectiveness of exercise interventions in reducing overall fatigue in children and adolescents with cancer. Exercise interventions did lead to a statistically significant improvement ($p = 0.01$) in general fatigue (i.e. tiredness, physical weakness) (effect size = -0.76; 95% Confidence Interval -1.35 to -0.17).

Study done by Greer[99] et al. (2012) evaluated the effectiveness of an individually administered CBT intervention geared to improve emotional well-being.Analysis of covariance models, adjusted for baseline scores, showed that those assigned to CBT had greater improvements in HAM-A scores compared to the control group, with an adjusted mean difference of –5.41 (95% confidence interval: –10.78 to –0.04) and a large effect size for the intervention (Cohen's $d = 0.80$).

Study by Topcu[100] et al. (2012) showed that pain management has been a subject of intense research with a number of technological advancements striving to achieve optimal pain control. Even with the advent of patient-controlled analgesia, continuous intravenous infusion and the intraspinal application of opioids, pain control remains a major challenge.

Tsitsi T [101] (2016) studied the effect of Progressive Muscle Relaxation (PMR) and Guided Imagery (GI), in reducing anxiety levels among parents of children diagnosed with any type of malignancy receiving active treatment at a Paediatric Oncology Unit in Republic of Cyprus

and in Greece. There was a statistically significant difference in the mean scores of the subjects in the intervention group in HAM-A scale between the T0 (14.67 ± 9.93) and T1 (11.70 ± 8.15) measurements (p = 0.008) compared to the control group in which a borderline difference (16.00 ± 11.52 vs 13.33 ± 8.38) was found (p = 0.066). The effect size for the intervention group was low to moderate (0.37). Regarding mood changes, there was a statistically significant difference in tension for parents in the intervention group between T0 and T1 (11.15 ± 5.39 vs 9.78 ± 4.26), (p = 0.027). Furthermore, the parents in the intervention group were significantly less sad following the intervention (T1) (2.81 ± 1.07 vs 2.19 ± 1.21), (p = 0.001), and felt significantly less tense (2.93 ± 0.91 vs 2.26 ± 0.90), (p = 0.001) and anxiety (2.63 ± 1.21 vs 2.19 ± 1.07), (p = 0.031) compared to those in the control group.

Study by Charalambous A[102] et al. (2016) on Guided Imagery and Progressive Muscle Relaxation as a Cluster of Symptoms Management Intervention in Patients Receiving Chemotherapy, results show that pain 4.2(2.5) - 2.5(1.6), Fatigue 27.6(4.1) - 19.3(4.1), HRQoL 54.9(22.7) - 64.5(23), Control: Pain 3.5(1.7) - 4.8(1.5), Fatigue 28.7(4.1) - 32.5(3.8), HRQoL 51.9(22.3)- 41.2(24.1)]. Nausea, vomiting and retching occurred significantly less often in the intervention group [pre-post: 25.4(5.9)- 20.6(5.6) compared to the control group (17.8(6.5)- 22.7(5.3) (F = 58.50 p<0.0001). More patients in the control group (pre:n = 33-post:n = 47) were found to be moderately depressed compared to those in the intervention group (pre:n = 35-post:n = 15) (X2 = 5.93; p = 0.02). This study provided evidence that the combination of GI and PMR can be effective in the management of a cluster of symptoms in cancer patients receiving chemotherapy.

Study by Pelekasis P[103] (2017) et al. revealed that in preintervention, majority (93.3%) had severe nausea followed by (6.7%) moderate nausea and in post-intervention approx two third (60%) had mild nausea followed by (40%) had moderate nausea. The x value between pre-intervention and postintervention was 4.932 which was found statistically highly significant in experimental group (p<0.001).

Darweesh[104] et al. (2018) showed that, in relaxation training program group there was significant decrease in the mean scores of depression (p=0.00), anxiety (p=0.00) and stress (p=0.00) at one month and at two month after program implementation.

The study by Devmurari and Nagrale[105], (2018) compared pain scores after the completion of 5 days of PMR therapy

In another study conducted by Hacer Alan Dikmen [106] et al. (2018), the mean difference between in-group scores of pain severity (p ¼ .001) and the effects of pain on daily life (p ¼ .001) detected at the third and eighth weeks was also found to be significant. Mean difference found at the 12th week for pain severity (p ¼ .013) and the effects of pain on daily life (p ¼ .017) was statistically significant for PMR group.

De Paolis [107] et al. (2019)found PMR with interactive imagery to be an effective adjuvant pain relief technique for terminal cancer patients.

Jong[108] et al (2018)used PMR as an effective tool for pain relief in children with primary headaches. Children (9-18 years) suffering from primary headaches more than two times per month received either TM (N = 42), HT (N = 45) or PMR (N = 44) for 3 months. Primary outcomes were frequency of headaches and ≥ 50% reduction in headaches at 3 and 9 months. Secondary outcomes were adequate relief, pain coping, anxiety and depressive symptoms, somatisation and safety of treatment. Groups were comparable at baseline. Headache frequency was significantly reduced in all groups from 18.9 days per month to 12.5 and 10.5 at respectively 3 and 9 months ($p < 0.001$), with no significant differences between the groups. Clinically relevant headache reduction (≥ 50%) was observed in 41% and 47% of children at 3 and 9 months respectively, with no significant differences between the groups.

Wennekes R [109] et al. (2019), studied children (9-18 years) suffering from primary headaches more than two times per month received either TM (N = 42), HT (N = 45) or PMR (N = 44) for 3 months. Primary outcomes were frequency of headaches and ≥ 50% reduction in headaches at 3 and 9 months. Secondary outcomes were adequate relief, pain coping, anxiety and depressive symptoms, somatisation and

safety of treatment. Groups were comparable at baseline. Headache frequency was significantly reduced in all groups from 18.9 days per month to 12.5 and 10.5 at respectively 3 and 9 months ($p < 0.001$), with no significant differences between the groups. Clinically relevant headache reduction (≥ 50%) was observed in 41% and 47% of children at 3 and 9 months respectively, with no significant differences between the groups.

A study done by Charalambous A[110] et al. (2019), results show that the three mediators in a serial causal order fully mediate the relationship between pain and HRQoL (IE overall=−0.384, 95% CI: LL=−0.51 to UL=−0.284) and the ratio of the overall indirect effect to the total effect is 0.8315 (95% CI: LL=0.5683 to UL=1.1718). This work provides evidence that targeting fatigue, anxiety and depression may have a meaningful effect on pain as a related symptom and potentially have a positive impact on HR QoL of patients with breast and prostate cancer.

This systematic review and meta-analysis was conducted by Ju Wb[111] (2019) with the aim of assessing the efficacy of relaxation techniques for pain relief in patients undergoing abdominal surgery. The data of 422 patients in the relaxation group and 424 patients in the control group were pooled for a meta-analysis, which indicated that patients undergoing abdominal surgery had significantly greater pain relief following relaxation therapy as compared to the controls random: standardized mean difference (SMD), -1.15; 95% CI, -2.04 to -0.26; P<0.00001).

MATERIALS AND METHODS

Research Design

For the present study, the design employed is Pre-test – Post-test control group design. This design requires at least two groups, each of which comprises randomly assigned participants. All groups are administered a pre-test, receive some sort of treatment condition and are post tested at the end of the study.

Source of Data

Study was conducted on outpatients and inpatients in paediatric oncology unit at Dayanand Medical College and Hospital.

SAMPLE COLLECTION

Study included IPD and OPD paediatric oncology patients of 7 to 18 years, undergoing cancer treatment except for oral chemotherapy drugs from August 2020 to January 2021 at Paediatric oncology unit of department of Paediatrics, DMCH, Ludhiana.

INCLUSION CRITERIA

1. Patients between 7 to 18 years of age undergoing chemotherapy.
2. Outpatients and Inpatients in Paediatric oncology unit at Dayanand Medical College and Hospital.

EXCLUSION CRITERIA

1. Patients with any major psychotic illness screened with history taking and interview.
2. Patients whose assent is not received.
3. Patients only on oral chemotherapy drugs. (Example CML) will be excluded.

METHODOLOGY

The study was conducted on outpatients and inpatients of 7 to 18 years, undergoing cancer treatment except for oral chemotherapy drugs from August 2020 to January 2021 at paediatric oncology unit at Dayanand Medical College and Hospital. Sociodemographic Performa was filled containing the basic information about the patient along with diagnosis, staging, and phase of treatment. The subjects were evaluated by using Brief Pain Inventory and The Memorial Symptom

Assessment Scale. Before the application of any test or intervention, informed assent was obtained from parents or caregivers of patients below 18 years of age. Subjects were instructed beforehand regarding the assessment tools. Sample was distributed between two groups based on random sampling. The assessment for pain and symptom distress was done prior to the intervention. Each participant underwent five follow up sessions, one session per day for consecutive days. After completion of fifth session of EFT in first group and JPMR in second group, participants were evaluated again for pain and symptom distress.

TOOLS

1. SOCIO – DEMOGRAPHIC PERFROMA
2. THE BRIEF PAIN INVENTORY (SHORT FORM)
3. THE MEMORIAL SYMPTOM ASSESSMENT SCALE – (7-12 years)
4. THE MEMORIAL SYMPTOM ASSESSMENT SCALE – (10-18 years)

1. The Brief Pain Inventory (BPI) short form was developed by Cleeland in 1984. It is a short, self-administered questionnaire which is designed in order to assess the severity and impact of pain, mainly of cancer origin. It is a 9-item self-administered questionnaire used to evaluate the severity of a patient's pain and the impact of this pain on the patient's daily functioning. The patient is asked to rate their worst, least, average, and current pain intensity, list current treatments and their perceived effectiveness, and rate the degree that pain interferes with general activity, mood, walking ability, normal work, relations with other persons, sleep, and enjoyment of life on a 10-point scale.[112]

The test-retest reliability of the BPI has been studied in cancer patients and other patients with pain. Initial short-term (1 day to 1 week) reliability for ratings of pain “worst” (0.93) and “usual” or “average” pain (0.78) in patients with cancer was high, which signals acceptable reliability. As expected, test-retest reliability for pain “now” severity ratings were lower (0.59), because pain intensity often changes over time.

Scoring: Pain Severity Score = Mean of items 3-6 (pain at its worst, pain at its least, average Pain Interference Score = Mean of items 9A-9G (interference of pain with: general activity, mood, walking, normal work, relations, sleep, enjoyment of life).

2. The Memorial Symptom Assessment Scale (MSAS) was developed in 2000 by Collins et al. to assess 30 cancer-related symptoms. The MSAS 10-18 for older children, provide children the opportunity to rate multiple symptoms with respect to symptom severity, frequency, and associated distress in addition to estimates of symptom prevalence. It is a 32 item inventory rated on a 5 point Likert-type scale. The MSAS is one of the few available comprehensive cancer-related symptom assessment tools with that Cronbach alpha reliability coefficient the total scales 0.76 (Chang,2000).[113]

Scoring:

The scoring of the MSAS yields several validated subscale scores.

A 10item MSAS Global Distress Index (MSAS-GDI) is considered to be a measure of overall symptom distress. The GDI is the average of the frequency of 4 prevalent psychological symptoms (feeling sad, worrying, feeling irritable, and feeling nervous) and the distress associated with 6 prevalent physical symptoms (lack of appetite, lack of energy, pain, feeling drowsy, constipation, dry mouth).

The Physical Symptom Subscale score (MSAS-PHYS) is the average of the frequency, severity and distress associated with 12 prevalent physical symptoms: lack of appetite, lack of energy, pain, feeling drowsy, constipation, dry mouth, nausea, vomiting, change in taste, weight loss, feeling bloated, and dizziness. The **Psychological Symptom Subscale score (MSAS-PSYCH)** is the average of the frequency, severity and distress associated with 6 prevalent psychological symptoms: worrying, feeling sad, feeling nervous, difficulty sleeping, feeling irritable, and difficulty concentrating.

The Total MSAS score (TMSAS) is the average of the symptom scores of all 32 symptoms in the MSAS instrument. Each symptom score is an average of its dimensions.

EFT

STEPS IN THERAPY

The basic format in EFT is to identify the problem and to start tapping. Each problem has many different aspects, for example physical tension, may have an asset of sensation of the pain or the emotion the pain is causing. The process is started with the aspect that is most present for the client, working with one aspect at a time. As the intensity of that aspect reduces, then we move onto the next aspect.

EFT PROCESS

1. Identify the Problem

This involves identifying what the problem is and the associated feelings. Then identifying what is causing the problem and what specifically happened. It also includes identifying if the stress is causing any tension or pain in the body.

2. Measuring the problem from 1 to 10.

Measuring or scaling the problem involves working out how intense the issue is, where 10 is very high intensity or high-level emotion and 1 is low intensity or low-level emotion. The number is based on how strong the issue is emotionally.

3. Start with tapping on the side of the hand

This step is the start of tapping procedure. Tap begins with the fingers of one hand on the karate chop point of the other hand (side of the hand below the little finger) and say the following three times with feeling:

“Even though I … (name the problem), I deeply and completely accept myself.”

4. Next step involves tapping each point 7 times as we say the phrase from the problem.

- Eyebrow – at the beginning of the eyebrow just above the nose.
- Side of the eye – on the bone bordering outside corner of the eye.
- Under eye – on the bone just under the eye
- Under nose – between the bottom of the nose and the upper lip

- Chin – midway between the point of the chin and the middle of the lower lip
- Collarbone – at the junction where the breastbone, collarbone and first rib meet.
- Under Arm – under the arm about 10cm from the armpit.
- Thumb – on the outside of the thumb, level with the base of the nail.
- Index Finger - on the side of the index finger closet to the thumb, level with the base of the nail.
- Middle Finger – in the same place on the middle finger.
- Little Finger – in the same place on the little or baby finger.
- Karate Chop (side of the hand) – on the edge of the hand.

5. Final clearing – on the Karate Chop say the starting set up phrase again (name the original problem again),

"Even though I … (name the problem), I deeply and completely accept myself."

6. Relax: Taking a gentle breath in and out and having a sip of water is very important to drink water to flush out any toxins that get released.

7. Testing the results: Measure the problem again from 1 to 10. Notice how the problem and original emotion feels different. If there is any emotional charge left, tapping is repeated again.

After the tapping many people notice a physical change, a sense of relief or possibly a new insight about the problem.

EFT for Physical Discomfort

Steps are as follows:

1. Locate a current physical discomfort and measure the discomfort.

2. Get specific information about the pain. This can be a description, the underlying emotions or information about what is causing the pain. Some of the questions to investigate are as follows:

- Description of the pain: What is the pain like? Does it have a colour? What shape or size is it? How big is it? What is the sensation like? Is it throbbing or pulsating? Does it have a sound? Is it sharp pain or dull pain? Where is it? Where else is it? How does the pain make you feel?

- The underlying contributor to the pain – What does the pain remind you of? When have you felt this kind of pain before? How does this pain make you feel? Who is the pain in the body part? I know the pain can't speak if it could speak what would it say? How does this make you feel?
- Information about when the pain occurs – when does the pain start? How long has it been there? What triggers it? When does the pain stop? What brings on the pain?

3. Measure any feelings or sensations and start tapping using their specific words

4. After a round of tapping we measure again and ask:

- Is it worse or better?
- Has it changed in nature or quality?
- Has it changed its location? Following the changing location of pain is known as 'chasing the pain'.

5. Keep tapping till the intensity comes down. In many cases when working with pain the location of pain changes. That is called chasing the pain and a very positive sign that EFT is working. We then explore emotional contributors, triggers, events or situations.

JPMR – STEPS IN THERAPY[114]

Requirements of JPMR

Conductive Environment: The setting for relaxation is quiet and of distraction noises. The client shall be kept physically comfortable in a position.

General Instruction (Before and During Muscle Relaxation Exercise): This instruction is kept simple and is easily understood by children exposed to Jacobson's progressive muscle relaxation technique and gives them a clear picture of how to co-operate during the exercise regimen.

a. To lie down on bed as comfortably as possible. Keep your body loose, light and free.

b. Be calm and comfortable.

c. Keep your eye closed.

d. Avoid stray thoughts.

e. Avoid extra movements of the body.

f. During the part of the exercise cycle tense the muscle tightly and hold for slow count of 5 seconds.

g. During the relation part of exercise cycle relaxes the muscle quickly and completely. let your mind relax and appreciate how relaxed the muscle is feeling for 10 seconds.

h. Try to keep all other muscles relaxed as you exercise specific muscle group.

i. As you exercise from head to toe, Observe changes like tightness and the development of light and soothing sensations.

j. Relax by taking three deep breaths inhaling through nose and exhaling through mouth after each step.

JPMR – STEPS

1. Clench each fist separately (right & left), feel the tension in the fist and forearm respectively for 5 seconds Release the fist, relax and feel relaxation for 10 seconds.

2. Bend each arm separately (right &left) up at the elbow and tense the biceps, keeping the hand relaxed, feel the tension for 5 seconds. Release the arm, relax and feel relaxation for 10 seconds.

3. Wrinkle your forehead; try to make your eyebrows touch your hairline which produces tension, feel the tension for 5 seconds. Release the eye brows relax and feel relaxation for 10 seconds.

4. Close your eyes and screw the muscles around the eyes for 5 seconds. Release, relax and feel relaxation for 10 seconds.

5. Tense the jaw by biting the teeth together, feel the tension in the jaw muscles for 5 seconds. Release, relax and feel relaxation for 10 seconds.

6. Press the tongue hard and flat against the roof of mouth with lips closed notice tension in throat and feel it for 5 seconds. Release, relax and feel relaxation for 10 seconds.

7. Push the head back as far as it will go (against a chair), feel the tension for 5 seconds. Bring head to its position, relax and feel relaxation for 10 seconds.

8. Bring the head down and press the chin down on to the chest for 5 seconds. Bring the head to its position, relax and feel relaxation for 10 seconds.

9. Tense shoulder by tightening and shrinking shoulders (Shrug your shoulders up to your ears), feel the tension for 5 seconds. Release, relax and feel relaxation for 10 seconds.

10. Take a deep breath, completely filling the lungs, hold the breath for few seconds and passively exhale. Relax and feel relaxation for 10 seconds

11. Pull in the stomach and tense the stomach muscle for 5 seconds. Release the stomach, relax and feel relaxation for 10 seconds

12. Arch your back away from the chair feel tension for 5 seconds. Relax and feel relaxation for 10 seconds.

13. Point toes towards your head, producing tension in calf muscles, feel tensing for 5 seconds. Relax and feel relaxation for 10 seconds.

14. Point the toes away from the head, feel the tension for 5 seconds. Relax and feel relaxation for 10 seconds.

STATISTICAL ANALYSIS

Data was described in terms of range; mean ± standard deviation (± SD), median, frequencies (number of cases) and relative frequencies (percentages) as appropriate. Comparison of quantitative variables between the groups was done using Student t-test and paired t test. Mann Whitney U test for independent samples for parametric and non-parametric data respectively. Comparison of quantitative variables within the groups was done using paired t-test. For comparing categorical data, Chi square ($\chi 2$) test was performed and exact test was used when the expected frequency was less than 5. Pearson's correlation was also used. A probability value (p value) less than 0.05 was be considered statistically significant. All statistical calculations were done using SPSS (Statistical Package for the Social Science) SPSS 21 version statistical program for Microsoft Windows.

OBSERVATIONS AND RESULTS

Total Sample Size of 30 participants was selected. Further, 15 participants were selected for EFT and other 15 participants for JPMR.

Table 1: Mean Age of Participants in EFT and JPMR group

	EFT		JMPR		t	p-value
	Mean	SD	Mean	SD		
AGE	12.93	3.33	11.53	2.83	1.242	0.224

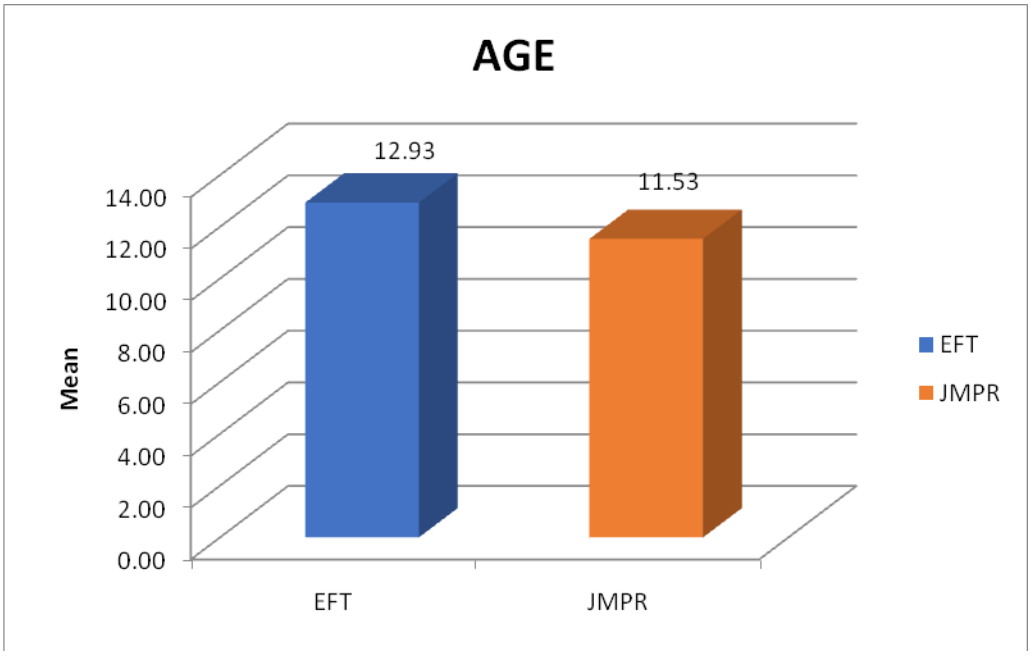

Figure 1: Mean Age of Participants in EFT and JPMR group (n=30)

Table 2: Distribution of Participants in terms of Gender

		INTERVENTION				Total	Chi-square value	p-value
		EFT		JMPR				
SEX	FEMALE	3	20%	7	47%	10	2.4	0.121
	MALE	12	80%	8	53%	20		
Total		15	100%	15	100%	30		

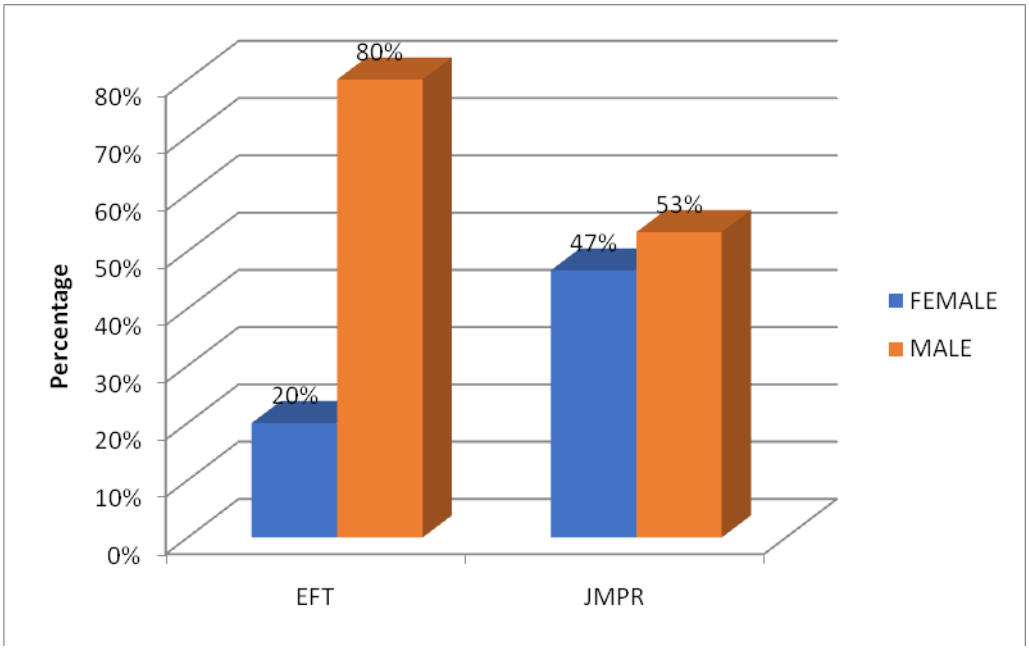

Figure 2: Distribution of Participants in Terms of Gender (n=30)

Table 3: Distribution of Participants in terms of Education

		INTERVENTION				Total	Chi-square value	p-value
			EFT		JMPR			
EDUCATION	2nd	1	7%	1	7%	2	**10.067**	**0.524**
	3rd	1	7%	2	13%	3		
	4th	0	0%	1	7%	1		
	5th	1	7%	3	20%	4		
	6th	3	20%	2	13%	5		
	7th	3	20%	1	7%	4		
	8th	0	0%	2	13%	2		
	9th	0	0%	1	7%	1		
	10th	3	20%	2	13%	5		
	11th	1	7%	0	0%	1		
	12th	2	13%	0	0%	2		

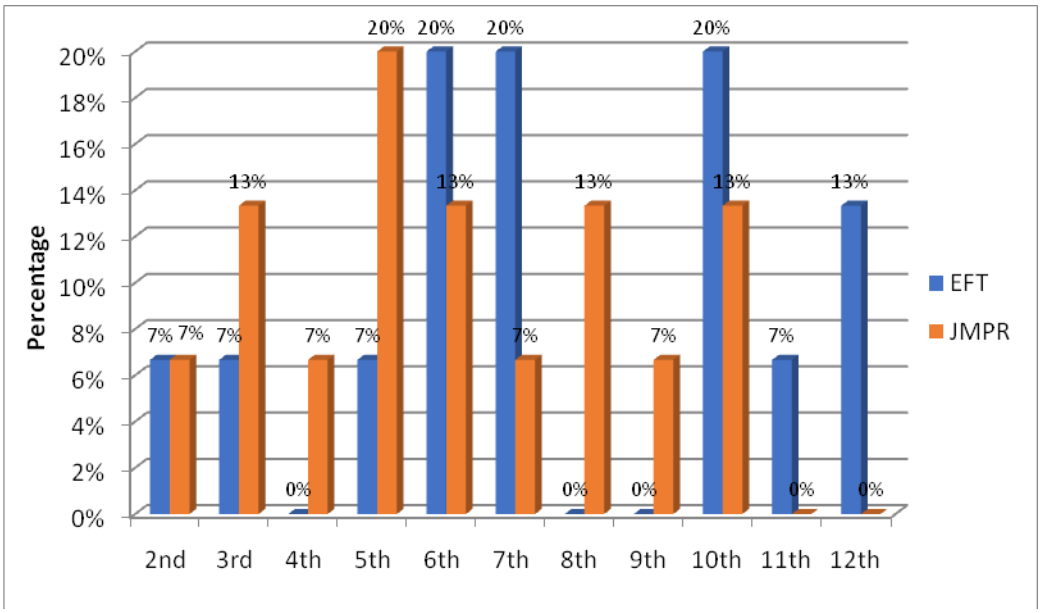

Figure 3: Distribution of Participants in Terms of Education (n=30)

Table 4: Distribution of Participants in terms of Family Type

		INTERVENTION				Total	Chi-square value	p-value
		EFT		JMPR				
FAMILY TYPE	Joint	4	27%	7	47%	11	**1.292**	**0.256**
	Nuclear	11	73%	8	53%	19		

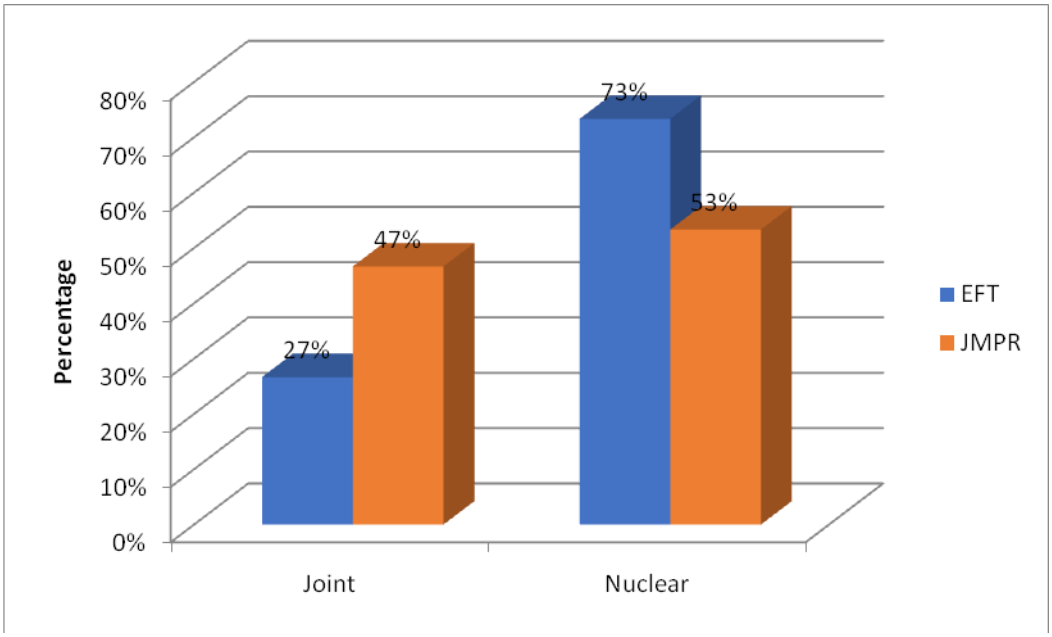

Figure 4: Distribution of Participants in Terms of Family Type (n=30)

Table 5: Distribution of Participants in terms of Background (n=30)

		INTERVENTION				Total	Chi-square value	p-value
		EFT		JMPR				
BACKGROUND	Rural	10	67%	8	53%	18	**0.556**	**0.456**
	Urban	5	33%	7	47%	12		

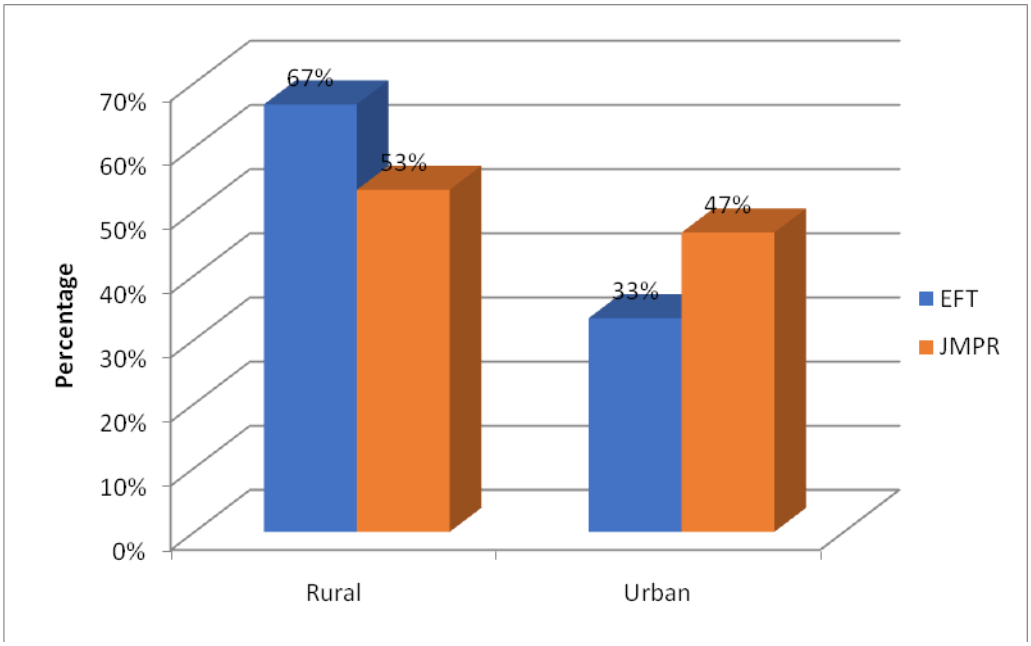

Figure 5: Distribution of Participants in Terms of Background (n=30)

Table 6: Distribution of Participants in terms of Socio-Economic Status (n = 30)

		INTERVENTION				Total	Chi-square value	p-value
		EFT		JMPR				
SOCIO ECONOMIC STATUS	Lower Middle	8	53%	7	47%	15	**1.852**	**0.396**
	Upper Lower	2	13%	5	33%	7		
	Upper Middle	5	33%	3	20%	8		

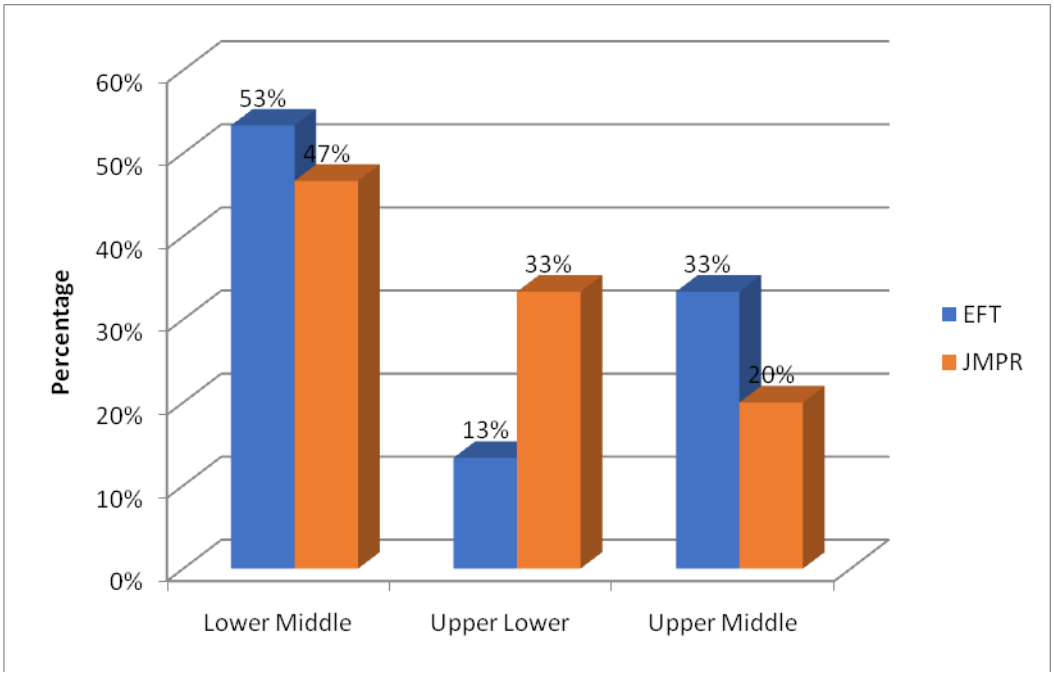

Figure 6: Distribution of Participants in Terms of Socio-Economic Status (n = 30)

Table 7: Distribution of Participants in terms of Diagnosis

		INTERVENTION				Total	Chi-square value	p-value
		EFT		JMPR				
DIAGNOSIS	ALCL	0	0%	1	7%	1	**11.000**	**0.276**
	ALL	8	53%	8	53%	16		
	AML	0	0%	1	7%	1		
	BURKITT LYMPHOMA	0	0%	1	7%	1		
	CA Nasopharynx	1	7%	0	0%	1		
	EURINGS	3	20%	0	0%	3		
	EWING SARCOMA	0	0%	1	7%	1		
	GERM CELL TUMOR	0	0%	1	7%	1		
	Osteosarcoma	3	20%	1	7%	4		
	T NHL	0	0%	1	7%	1		

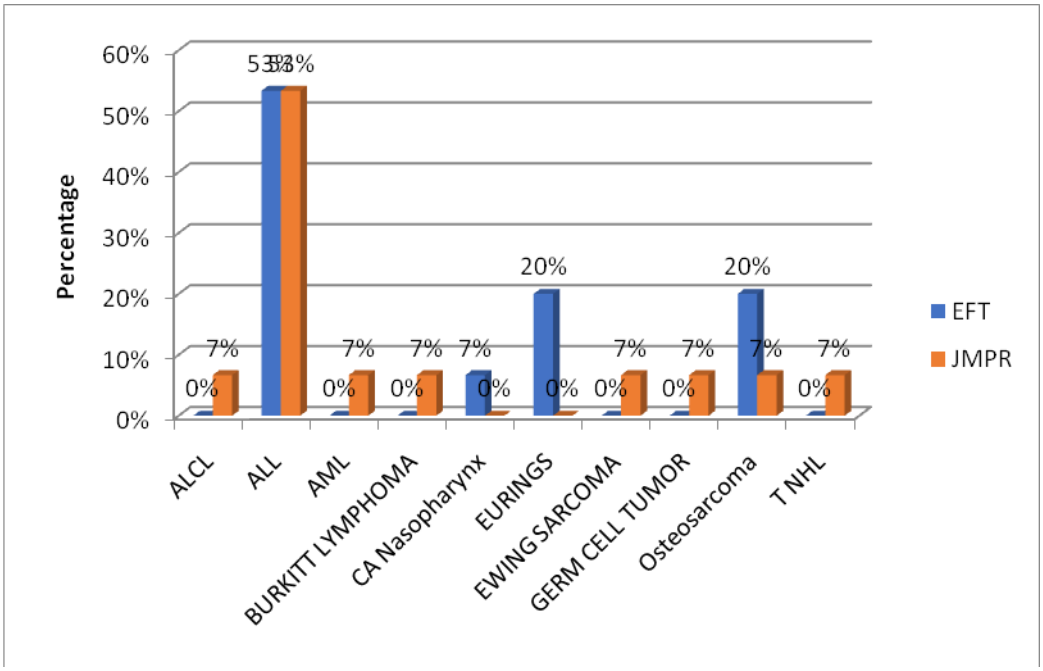

Figure 7: Distribution of Participants in Terms of Diagnosis (n= 30)

Table 8: Distribution of Participants in terms of Staging

		INTERVENTION				Total	Chi-square value	p-value
		EFT		JMPR				
STAGING	HIGH	3	20%	4	27%	7	**5.540**	**0.477**
	INTERMEDIATE	4	27%	5	33%	9		
	INTERMEDIATE RISK	1	7%	0	0%	1		
	METASTATIC	1	7%	0	0%	1		
	NON METASTATIC	5	33%	2	13%	7		
	STAGE 3	1	7%	3	20%	4		
	STAGE 4	0	0%	1	7%	1		

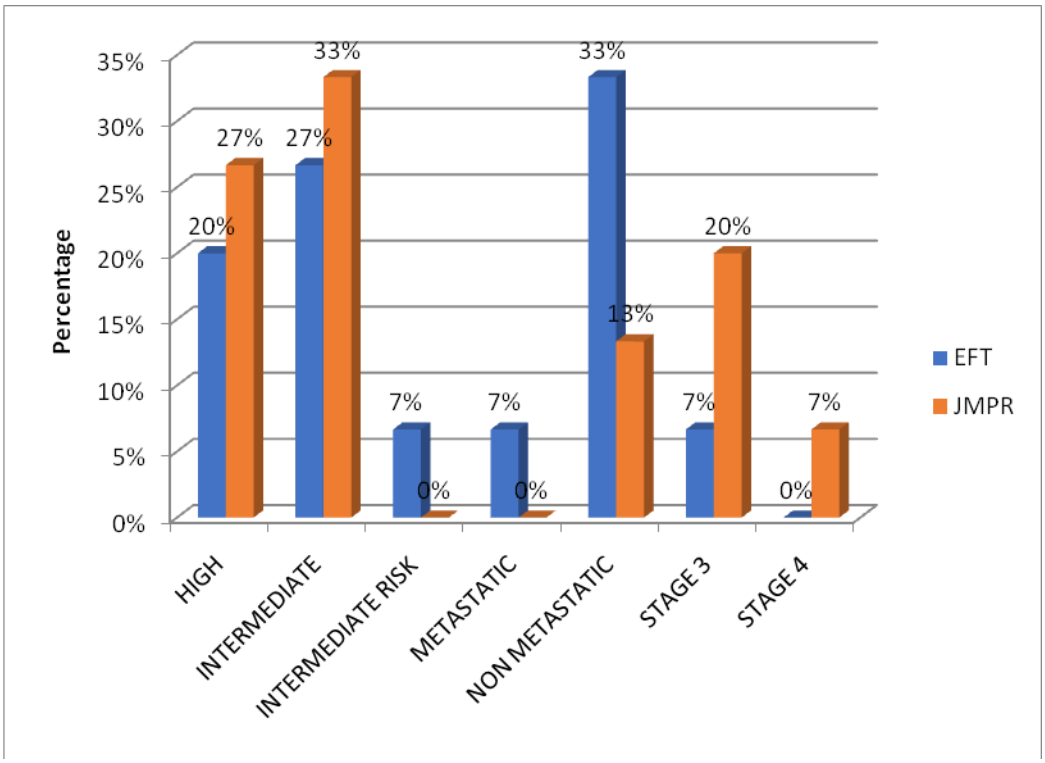

Figure 8: Distribution of Participants in Terms of Staging (n = 30)

Table 9: Distribution of Participants in terms of Phase of treatment

		INTERVENTION				Total	Chi-square value	p-value
		EFT		JMPR				
PHASE OF TREATMENT	Consolidation	1	7%	3	20%	4	**4.333**	**0.363**
	Induction	3	20%	6	40%	9		
	Intensive	8	53%	4	27%	12		
	Maintainance	3	20%	2	13%	5		

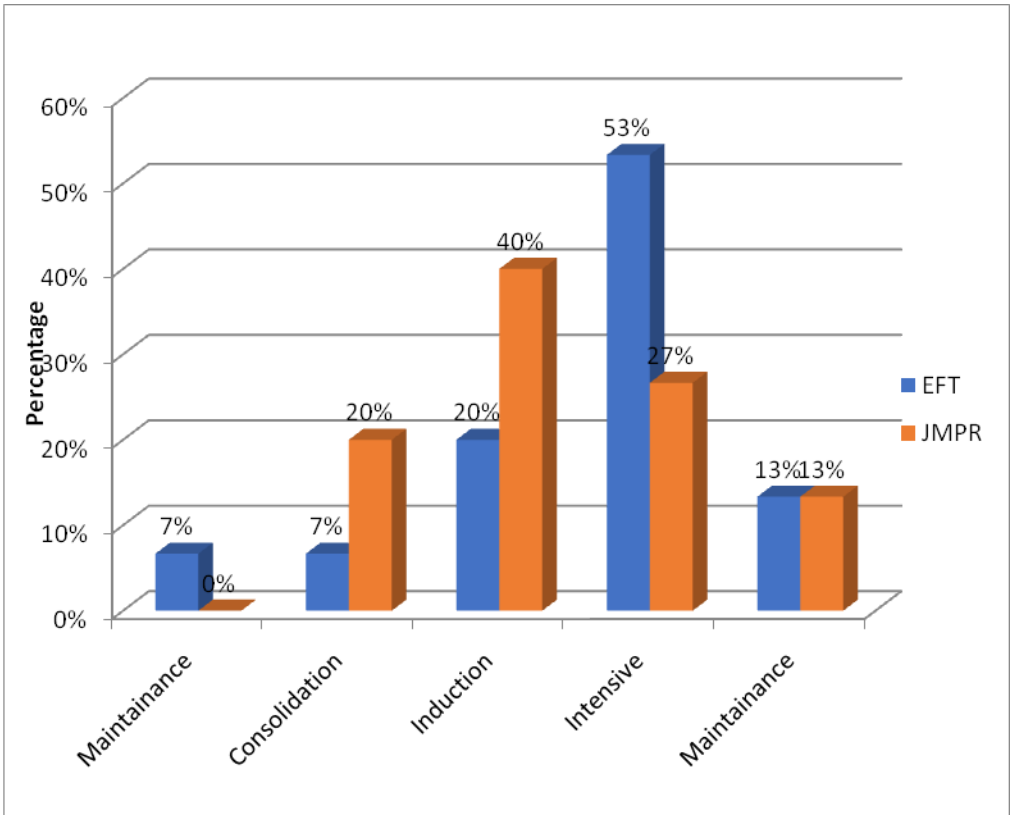

Figure 9: Distribution of Participants in Terms of Phase of treatment (n = 30)

Table 10: Mean Difference on Pain Severity After Pre- and Post-Test In EFT AND JPMR group.

	EFT		JMPR		t	p-value
	Mean	SD	Mean	SD		
Pre-Pain severity	6.56	1.24	5.91	1.65	1.214	0.235
Post Pain severity	4.15	0.96	4.81	1.47	-1.462	0.155
Pain Severity	2.41	0.66	1.10	0.50	6.114	0.000

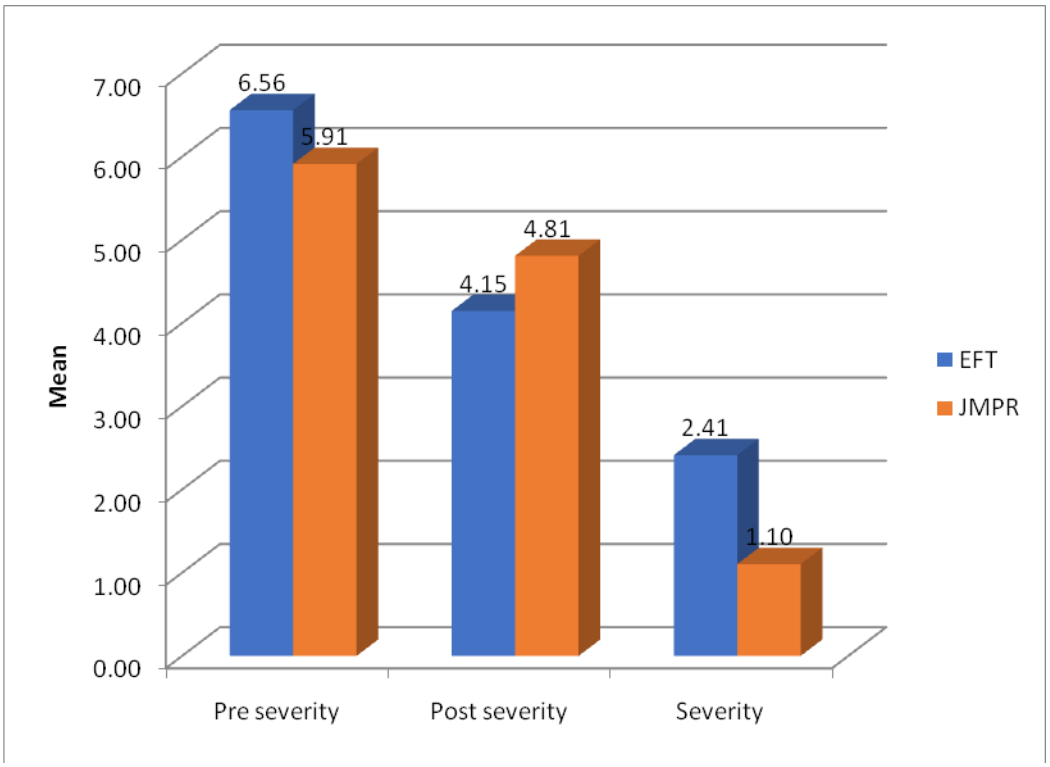

Figure 10: Mean Difference on Pain Severity After Pre- and Post-Test In EFT AND JPMR group. (n = 30)

Table 11: Mean Difference on Pain Interference After Pre- and Post-Test In EFT and JPMR group.

	EFT		JMPR		t	p-value
	Mean	SD	Mean	SD		
Pre Pain interference	5.86	1.72	4.45	2.04	2.040	0.051
Post Pain interference	3.95	1.56	3.82	1.75	0.212	0.833
Pain Interference	1.91	0.75	0.63	0.44	5.710	0.000

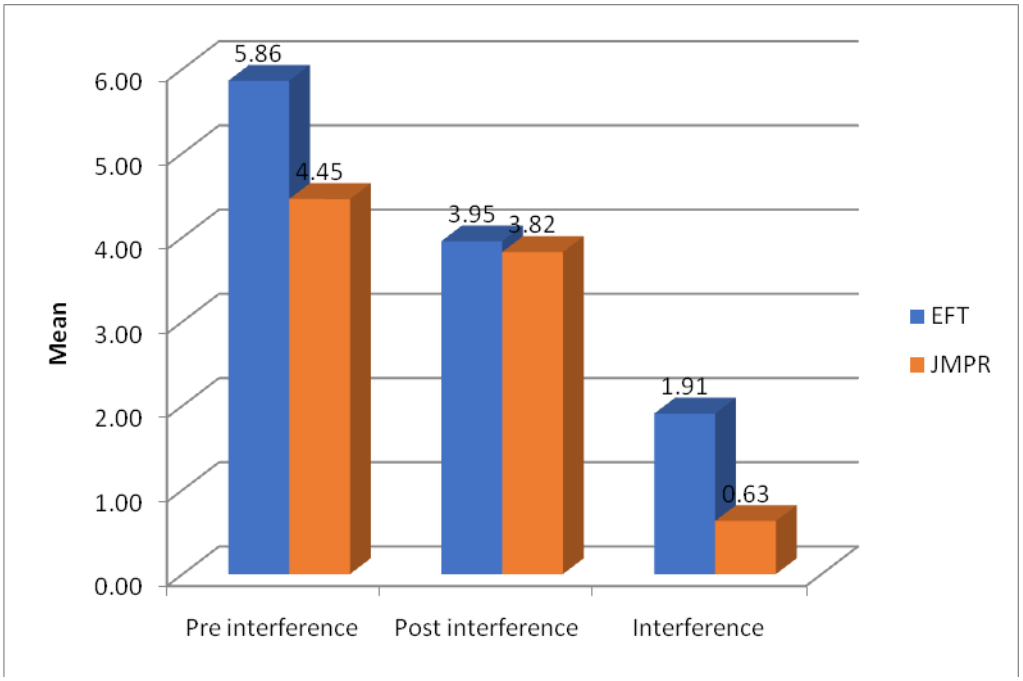

Figure 11: Mean Difference on Pain Interference After Pre- and Post-Test In EFT AND JPMR group. (n = 30)

Table 12: Mean Difference on Physical Symptoms after pre- and post-test in EFT AND JPMR group.

	EFT		JMPR		t	p-value
	Mean	SD	Mean	SD		
PRE MSAS PHY	4.67	1.32	3.81	1.06	1.961	0.060
POST MSAS PHY	2.65	1.02	3.13	1.15	-1.218	0.233
MSAS PHY	2.03	0.90	0.68	0.47	5.130	0.000

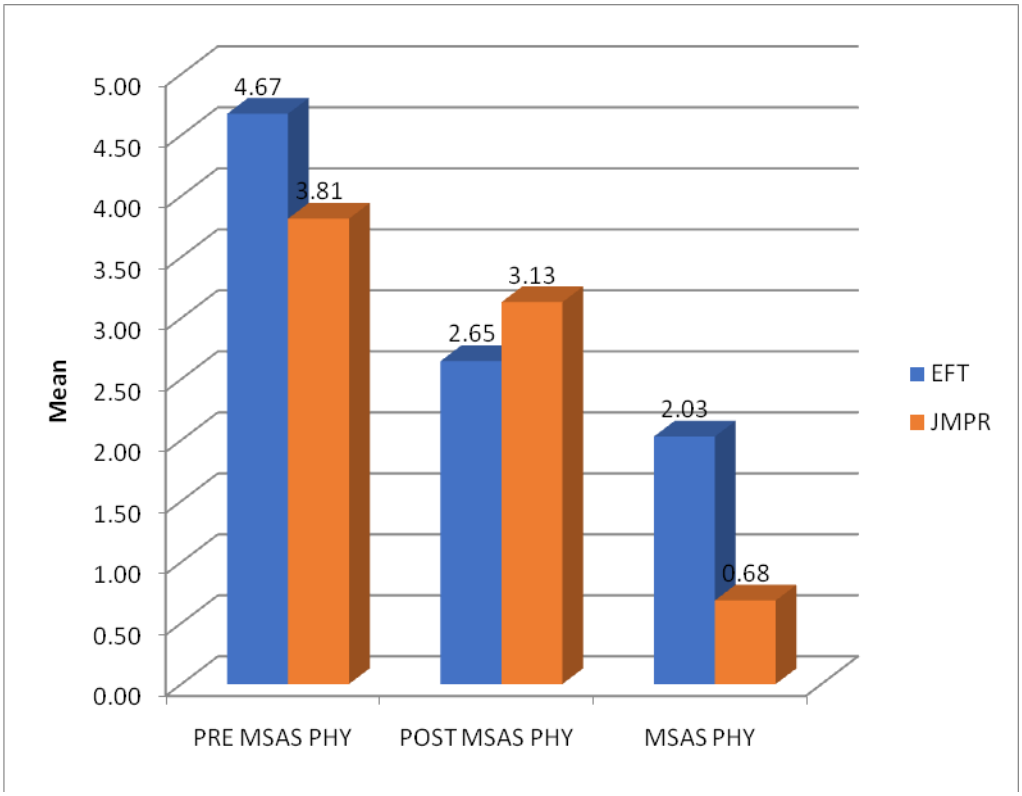

Figure 12: Mean Difference on Physical Symptoms after pre- and post-test in EFT AND JPMR group. (n = 30).

Table 13: Mean Difference on Psychological Symptoms after pre- and post-test in EFT AND JPMR group.

	EFT		JMPR		t	p-value
	Mean	SD	Mean	SD		
PRE MSAS PSY	4.35	2.06	3.35	2.18	1.300	0.204
POST MSAS PSY	2.34	1.01	2.77	1.85	-0.783	0.440
MSAS PSY	2.01	1.40	0.58	0.63	3.618	0.001

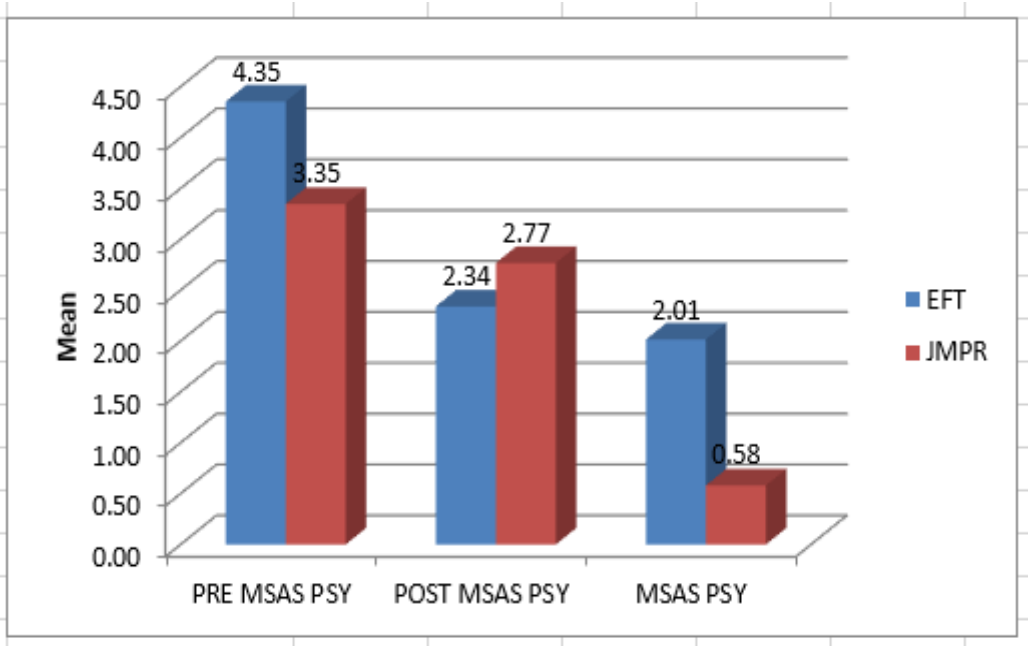

Figure 13: Mean Difference on Psychological Symptoms after pre- and post-test in EFT AND JPMR group. (n = 30).

Table 14: Mean Difference on Global Distress Index after pre- and post-test in EFT AND JPMR group.

	EFT		JMPR		t	p-value
	Mean	SD	Mean	SD		
PRE MSAS GDI	3.51	1.14	2.91	1.11	1.460	0.156
POST MSAS GDI	1.76	0.91	2.27	1.00	-1.474	0.152
MSAS GDI	1.75	0.43	0.63	0.49	6.628	0.000

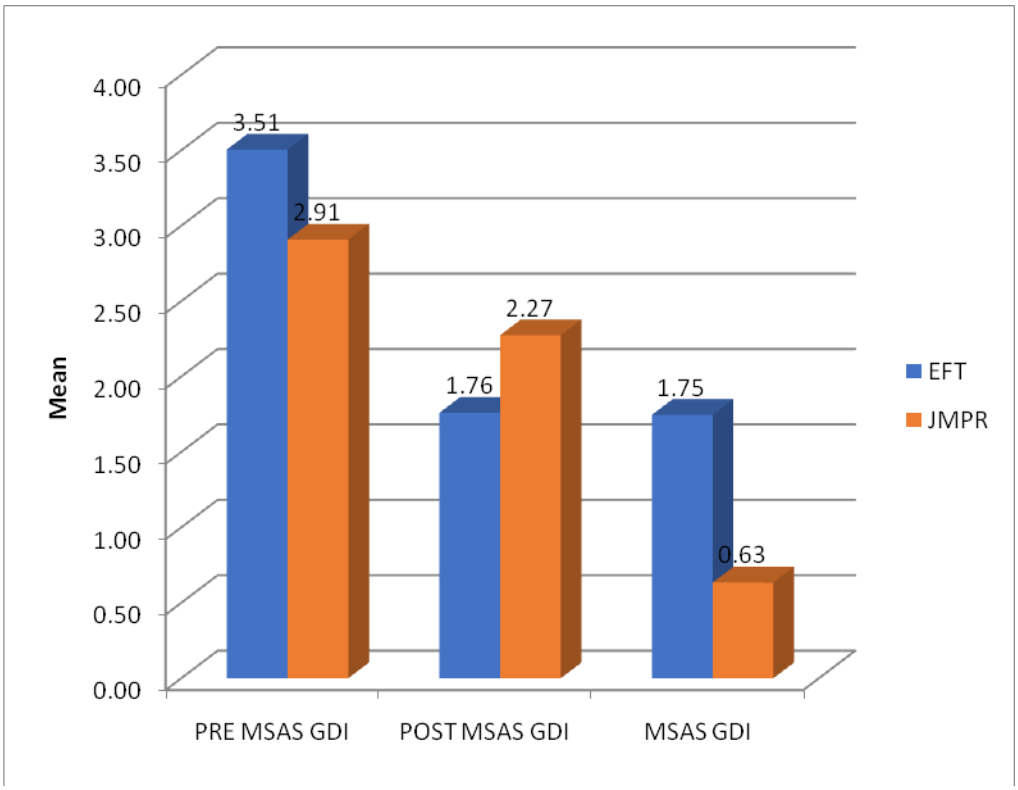

Figure 14: Mean Difference on Global Distress Index after pre- and post-test in EFT AND JPMR group. (n = 30).

Table 15: Mean Difference of pre- and post-EFT on Pain and Symptom Distress

EFT	Pre		Post		t	p-value	Difference	
	Pre	SD	Post	SD			Mean	SD
Pain Severity	6.56	1.24	4.15	0.96	14.071	0.000	2.41	0.66
Pain Interference	5.86	1.72	3.95	1.56	9.900	0.000	1.91	0.75
MSAS PHY	4.67	1.32	2.65	1.02	8.734	0.000	2.03	0.90
MSAS PSY	4.35	2.06	2.34	1.01	5.568	0.000	2.01	1.40
MSAS GDI	3.51	1.14	1.76	0.91	15.742	0.000	1.75	0.43
MSAS	3.26	0.93	1.76	0.63	10.571	0.000	1.50	0.55

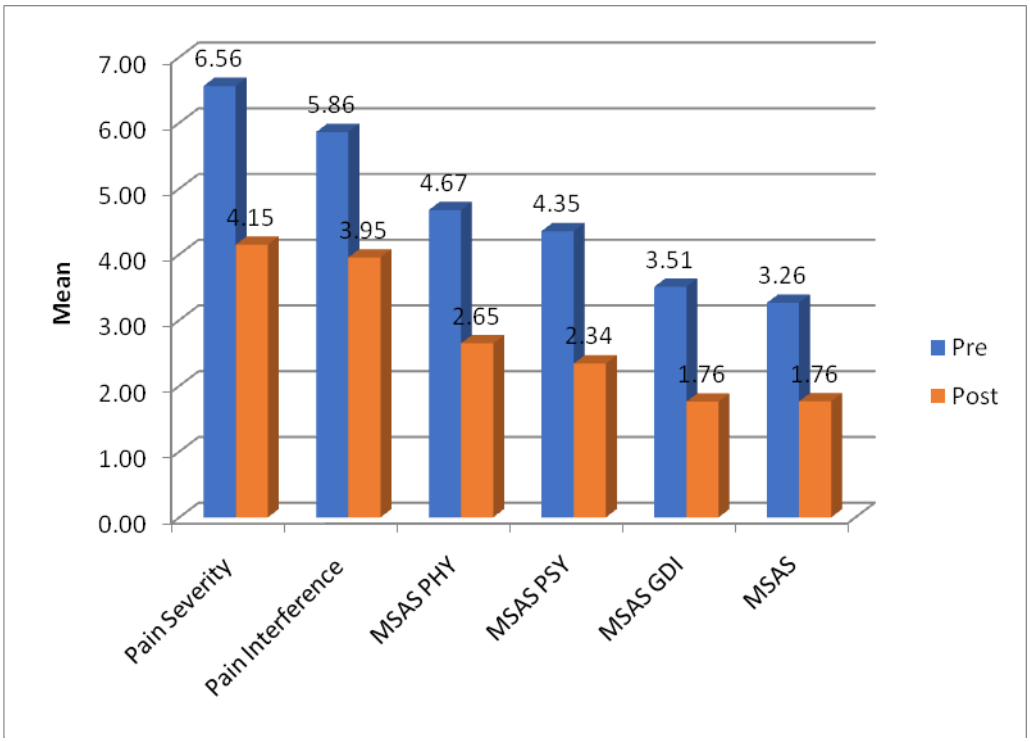

Figure 15: Mean Difference of pre- and post-EFT on Pain and Symptom Distress

Table 16: Mean Difference of pre and post JPMR on Pain and Symptom Distress

JMPR	Pre		Post		t	p-value	Difference	
	Pre	SD	Post	SD			Mean	SD
Pain Severity	5.91	1.65	4.81	1.47	8.593	0.000	1.10	0.50
Pain Interference	4.45	2.04	3.82	1.75	5.546	0.000	0.63	0.44
MSAS PHY	3.81	1.06	3.13	1.15	5.656	0.000	0.68	0.47
MSAS PSY	3.35	2.18	2.77	1.85	3.583	0.003	0.58	0.63
MSAS GDI	2.91	1.11	2.27	1.00	5.036	0.000	0.63	0.49
MSAS	2.74	0.59	2.16	0.65	4.405	0.001	0.59	0.52

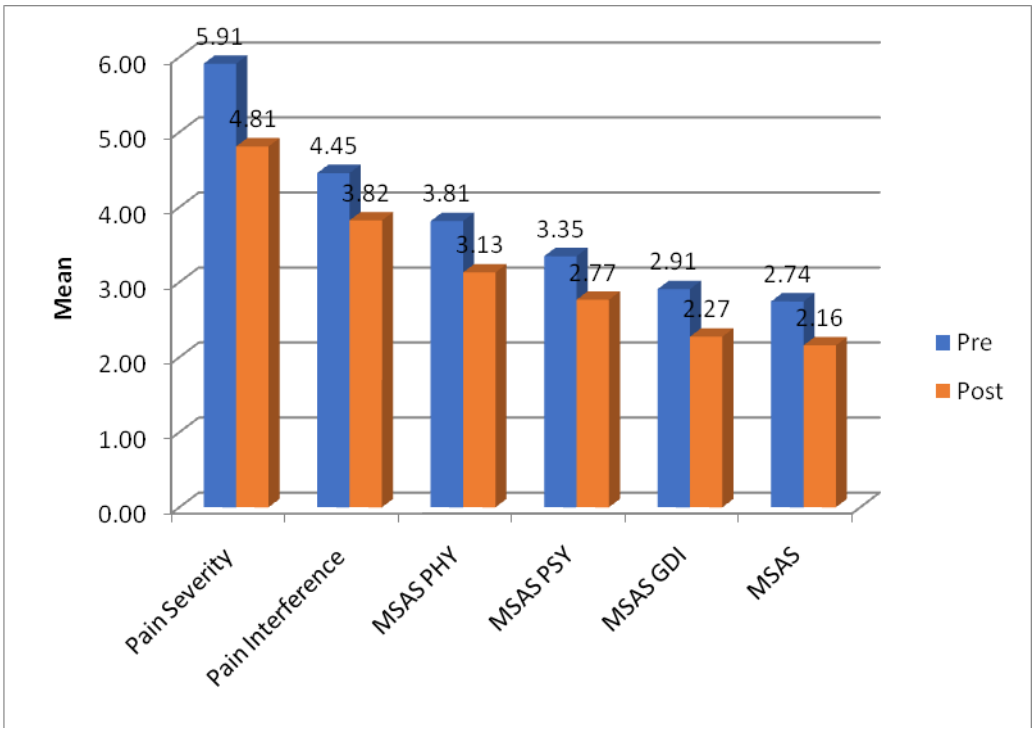

Figure 16: Mean Difference of pre and post JPMR on Pain and Symptom Distress

Table 17: Shows Correlation Between Age and Pain Severity

		Pain Severity
AGE	Pearson Correlation	.393*
	Sig. (2-tailed)	.032
	N	30

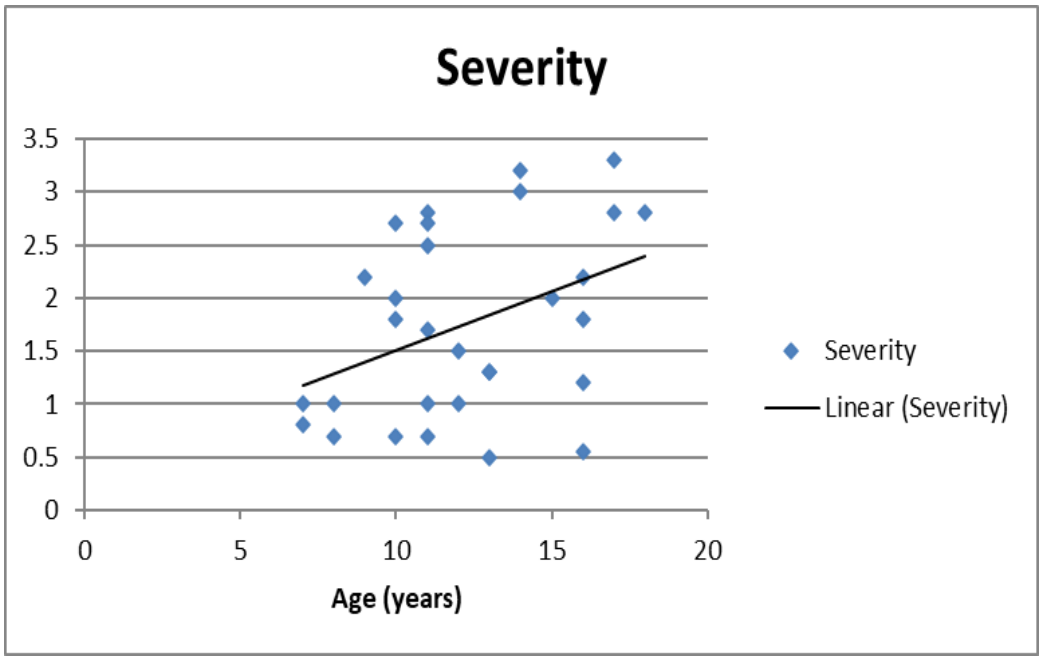

Figure 17: Shows Correlation Between Age and Pain Severity

Table 18: Shows Correlation Between Age and Pain Interference

		Pain Interference
AGE	Pearson Correlation	.519**
	Sig. (2-tailed)	.003
	N	30

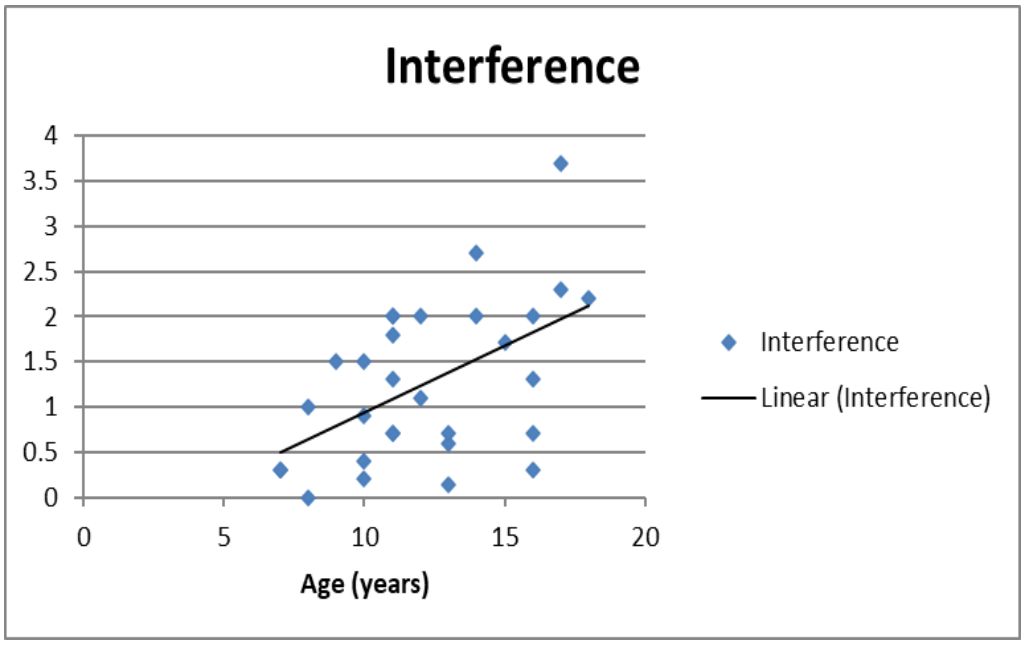

Figure 18: Shows Correlation Between Age and Pain Interference

Table 19: Shows Correlation between Pain Severity and Pain Interference

		Pain Interference
Pain Severity	Pearson Correlation	.835**
	Sig. (2-tailed)	.000
	N	30

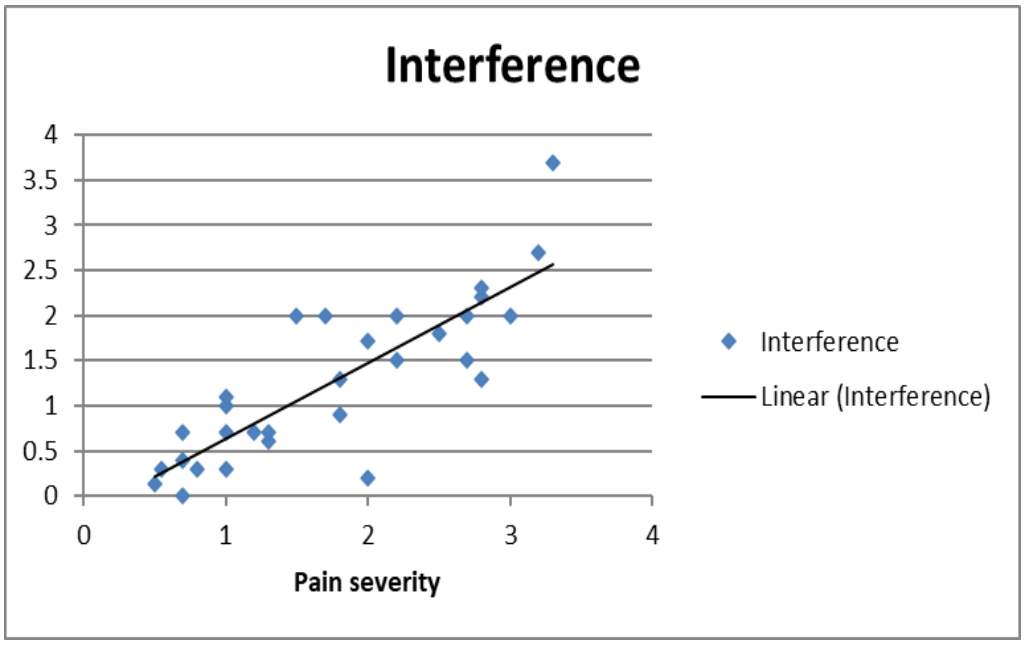

Figure 19: Shows Correlation Between Pain Severity and Pain Interference

Table 20: shows correlation between Pain Severity and Symptom Distress

		MSAS PHY	MSAS PSY	MSAS GDI
Pain Severity	Pearson Correlation	.544**	.462*	.642**
	Sig. (2-tailed)	.002	.010	.000
	N	30	30	30

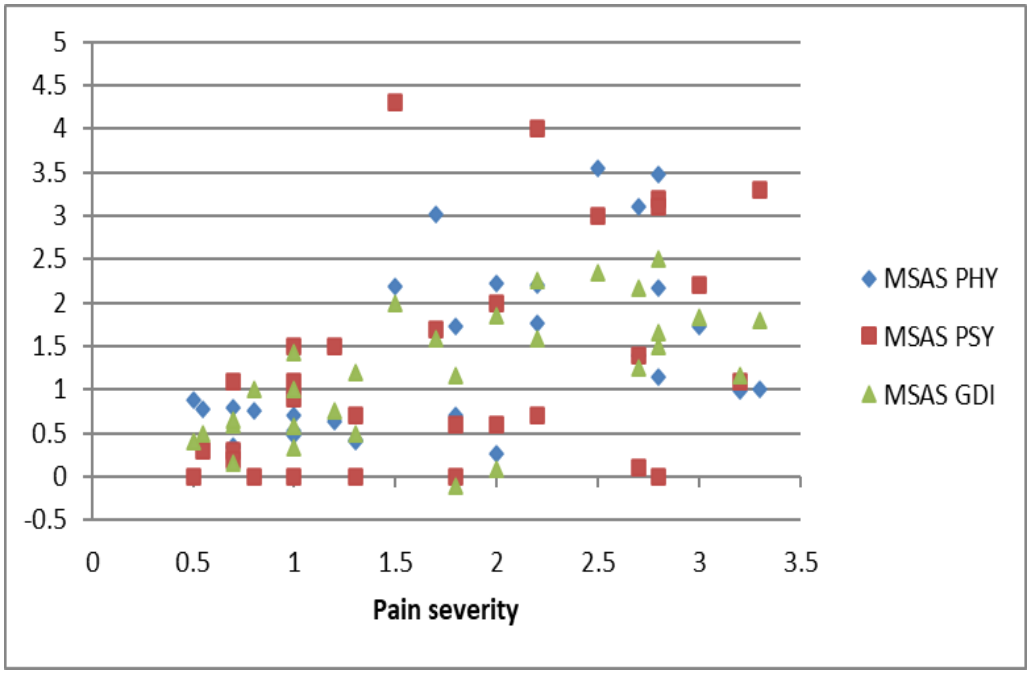

Figure 20: Shows Correlation Between Pain Severity and Symptom Distress

Table 21: shows correlation between Pain Interference and Symptom Distress

		MSAS PHY	MSAS PSY	MSAS GDI
Pain Interference	Pearson Correlation	.508**	.612**	.683**
	Sig. (2-tailed)	.004	.000	.000
	N	30	30	30

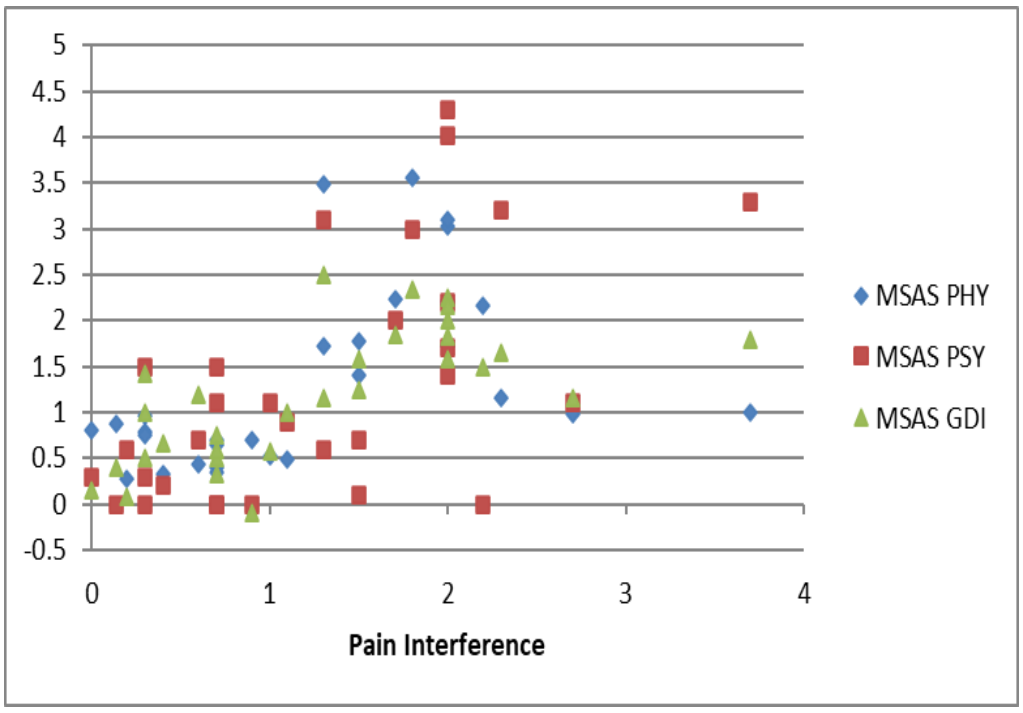

Figure 21: Shows Correlation Between Pain Interference and Symptom Distress

RESULTS

The study was conducted on inpatients and outpatients of 7 to 18 years, undergoing cancer treatment except for oral chemotherapy drugs from August 2020 to January 2021 at paediatric oncology unit at Dayanand Medical College and Hospital. Sociodemographic Performa was filled containing the basic information about the patient along with diagnosis, staging, and phase of treatment. The subjects were evaluated by using Brief Pain Inventory and The Memorial Symptom Assessment Scale. The assessment for pain and symptom distress was done prior to the intervention. Each participant underwent five follow up sessions, one session per day for consecutive days. After completion of fifth session of EFT in first group and JPMR in second group, participants were evaluated again for pain and symptom distress.

Table 1 and Figure 1 shows Mean age of participants in both the groups. Mean age in EFT group was 12.93 and in JPMR group was 11.53 which shows that there is no significant difference in the age of participants in both the groups.

Table 2 and Figure 2 shows Distribution of Participants in terms of Gender. 20% females were in EFT group and 47% in JPMR group. 80% Males were in EFT group and 53% in JPMR group which shows that there is no significant difference in gender of participants in both the groups.

Table 3 and Figure 3 shows Distribution of Participants in terms of Education. 20% of participants are from 6^{th} and 10^{th} standard in EFT and 5^{th} standard in JPMR. 13% in EFT are in 12^{th} and 7^{th} standard and 3^{rd}, 6^{th}, 8^{th} and 10^{th} standard in JPMR. 7 % of EFT participants were in 2^{nd}, 3^{rd}, 5^{th} and 11^{th} standard while in 2^{nd}, 4^{th}, 7^{th} and 9^{th} standard in JPMR which shows that there is no significant difference in the education of participants in both the groups.

Table 4 and Figure 4 shows Distribution of Participants in terms of Family Type, where 27% were from joint family and 73% from nuclear family in EFT and 47% from30 joint family and 53% from nuclear family

in JPMR which shows that there is no significant difference in the family type of participants in both the groups.

Table 5 and Figure 5 shows Distribution of Participants in terms of Background, where 67% were from Rural and 33% from Urban background in EFT and 53% from Rural and 47% from Urban background in JPMR which shows that there is no significant difference in the background of participants in both the groups.

Table 6 and Figure 6 shows Distribution of Participants in terms of Socio-Economic Status, where 53% were from Lower Middle, 13% from Upper Lower and 33% from Upper Middle Socio Economic Status in EFT and 47% were from Lower Middle, 33% from Upper Lower and 20% from Upper Middle Socio Economic Status in JPMR which shows that there is no significant difference in the socio economic status of participants in both the groups.

Table 7 and Figure 7 shows Distribution of Participants in terms of Diagnosis, where 53% were diagnosed as ALL, 20% as Eurings and Osteosarcoma and 7% as CA Nasopharynx in EFT and 53% as ALL and 7% as ALCL, AML, Burkitt Lymhoma, Ewing Sarcoma, osteosarcoma and germ cell tumor in JPMR which shows that there is no significant difference in the diagnosis of participants in both the groups.

Table 8 and Figure 8 shows Distribution of Participants in terms of Staging where 33% were at Non Metastatic stage in EFT and 13% in JPMR, 27% were at Intermediate stage in EFT and 33% in JPMR. 20% in EFT and 27% in JPMR were at High stage. 7% in EFT were at intermediate risk stage, metastatic stage and at third stage. 7% in JPMR were at stage 4 which shows that there is no significant difference in the staging of participants in both the groups.

Table 9 and Figure 9 shows Distribution of Participants in terms of Phase of treatment, which has been divided into 4 phases. In EFT group, 53% were in intensive phase, 20% of participants were in maintenance and induction phase and 7 % in consolidation phase. In JPMR group, 40% were in induction phase, 27% in intensive phase, 20% in consolidation phase and 13% in maintenance phase which

shows that there is no significant difference in the phase of treatment of participants in both the groups.

Table 10 and Figure 10 shows the mean difference in pain severity after pre- and post-test in EFT AND JPMR. Mean difference in pre- and post-pain severity test in EFT was 2.41 and 1.10 in JPMR which shows greater significant difference in EFT group as compared to JPMR.

Table 11 and Figure 11 shows the mean difference in pain interference after pre- and post-test in EFT AND JPMR. Mean difference in pre and post-pain interference test in EFT was 1.91 and 0.63 in JPMR which shows greater significant difference in EFT group as compared to JPMR.

Table 12 and Figure 12 shows the mean difference in physical symptom after pre- and post-test in EFT AND JPMR. Mean difference in pre and post-physical symptom subscale (MSAS PHY) in EFT was 2.03 and 0.68 in JPMR which shows greater significant difference in EFT group as compared to JPMR.

Table 13 and Figure 13 shows the mean difference in psychological symptom after pre- and post-test in EFT AND JPMR. Mean difference in pre and post- psychological symptom subscale (MSAS PSY) in EFT was 2.01 and 0.58 in JPMR which shows greater significant difference in EFT group as compared to JPMR.

Table 14 and Figure 14 shows the mean difference in overall symptom distress after pre- and post-test in EFT AND JPMR. Mean difference in pre- and post- global distress index (MSAS GDI) in EFT was 1.75 and 0.63 in JPMR which shows greater significant difference in EFT group as compared to JPMR.

Table 15 and Figure 15 shows the mean difference in pain and symptom distress after pre- and post-EFT intervention. Mean difference after pre- and post-intervention on pain severity was 2.41, on pain interference was 1.91, on physical symptom distress was 2.03, on psychological distress was 2.01 and on global distress index was 1.75, which shows that there is a significant difference in pain and symptom distress management after post intervention assessment.

Table 16 and Figure 16 shows the mean difference in pain and symptom distress after pre- and post-JPMR intervention. Mean difference after pre- and post-intervention on pain severity was 1.10, on pain interference was 0.63, on physical symptom distress was 0.68, on psychological distress was 0.58 and on global distress index was 0.63, which shows that there is a significant difference in pain and symptom distress management after post intervention assessment.

Table 17 shows correlation between Age and Pain Severity with Pearson's correlation value 0.393 which shows more the age more will be the pain severity.

Table 18 shows correlation between Age and Pain Interference with Pearson's correlation value 0.519 which shows more the age more will be the pain severity.

Table 19 shows correlation between Pain Severity and Pain Interference with Pearson's correlation value 0.835 which shows more the severity of pain more will be the pain interference.

Table 20 shows correlation between Pain Severity and physical symptom subscale (MSAS PHY), psychological symptom subscale (MSAS PSY), global distress index (MSAS GDI) and average of all symptoms (MSAS) with Pearson's correlation value 0.544, 0.462, 0.642 and 0.530 respectively which shows more the pain severity more will be the symptom distress.

Table 21 correlates the relationship between Pain Interference and physical symptom subscale (MSAS PHY), psychological symptom subscale (MSAS PSY), global distress index (MSAS GDI) and average of all symptoms (MSAS) with Pearson's correlation value 0.508, 0.612, 0.683 and 0.529 respectively which shows more the pain interference more will be the symptom distress.

DISCUSSION

The present study was designed to study the symptom distress and pain experienced by the children undergoing treatment for cancer. It also aimed at studying the effectiveness of psychological interventions, namely, Jacobson's Muscle relaxation technique (JPMR) and Emotional Freedom Technique (EFT) in management of pain and symptom distress among paediatric oncology patients. Study also aimed at comparing the effectiveness of both the interventions.

In the present study, a total of 30 participants were included, where 15 participants were intervened with JPMR and the other 15 with EFT in regard to pain and symptom distress management. Each participant underwent five follow up sessions, one session per day for consecutive days.

Pain was evaluated using Brief Pain Inventory and Symptom Distress was evaluated using Memorial Symptom Assessment Scale. Pre and Post intervention evaluation was then compared on various dimensions.

SOCIODEMOGRAHIC ATTRIBUTES

AGE

In the present study, age range of the participants was 7 – 18 years. Mean age of participants in EFT group was 12.93 and in JPMR group was 11.53 which shows that there is no significant difference in the age of participants in both the groups. This is in concordance with a study done by Coughtrey A[115] et al. (2017) where the mean age of participants ranged between 7 to 18 years which is same as the age range of the current study. In another study by Amy H. Gaesser[116] et al (2015), age range of participants was 10–18 years which is in support of our study.

EDUCATION

In the present study, distribution of participants in terms of education ranges from 2nd to 12th standard. 20% of participants are from 6th and 10th standard in EFT and 5th standard in JPMR. 13% in EFT are in 12th and 7th standard and 3rd, 6th, 8th and 10th standard in JPMR. 7 % of

EFT participants were in 2nd ,3rd, 5th and 11th standard while in 2nd, 4th, 7th and 9th standard in JPMR which shows that there is no significant difference in the education of participants in both the groups. The education level in the present study being is in concordance with the study done by Amy H. Gaesser [116] et al (2015), in which participants were in grade range from 6th to 12th.

GENDER

Distribution of participants in terms of gender in the current study includes 20% females in EFT group and 47% in JPMR group. 80% Males are in EFT group and 53% in JPMR group which shows that there is no significant difference in the gender of participants in both the groups. Another which shows comparable results with our study is by Debra P. Shockey[117], et al (2013) where 42% female (5/12) and 58% male (7/12).

FAMILY TYPE

In the current study, distribution of participants in terms of Family Type, where 27% were from joint family and 73% from nuclear family in EFT and 47% from joint family and 53% from nuclear family in JPMR which shows that there is no significant difference in the family type of participants in both the groups. The investigator was unable to find a similar relation in studies done earlier.

BACKGROUND

In the current study, distribution of participants in terms of Background was seen in terms of living in rural or urban area. In the EFT group, 67% were from Rural and 33% from Urban background and 53% from Rural and 47% from Urban background in JPMR group which shows that there is no significant difference in the background of participants in both the groups. The investigator was unable to find a similar relation in studies done earlier.

SOCIO ECONOMIC STATUS

In the current study, distribution of participants in terms of Socio-Economic Status, where 53% were from Lower Middle, 13% from Upper Lower and 33% from Upper Middle Socio-Economic Status in EFT and 47% were from Lower Middle, 33% from Upper Lower and

20% from Upper Middle Socio-Economic Status in JPMR which shows that there is no significant difference in the socio-economic status of participants in both the groups. The investigator was unable to find a similar relation in studies done earlier.

DIAGNOSIS

In the current study, 53% were diagnosed as ALL, 20% as Eurings and Osteosarcoma and 7% as CA Nasopharynx in EFT group and 53% as ALL and 7% as ALCL, AML, Burkitt Lymhoma, Ewing Sarcoma, osteosarcoma and germ cell tumor in JPMR group which shows that there is no significant difference in the diagnosis of participants in both the groups. In a study by Broome[87] et al, (1990), the sample was composed of participants, all of whom had acute lymphocytic leukaemia (ALL) which resembles the majority of diagnosis in the current study. Another which shows comparable results with our study is by Debra P. Shockey[117] et al (2013). The majority of the children (50%) were receiving treatment for leukemia (6/12), whereas 25% of the children were being treated for soft tissue sarcoma (3/12).

STAGE OF CANCER

In the current study, Distribution of Participants in terms of Staging was done. 33% were at Non-Metastatic stage in EFT and 13% in JPMR, 27% were at Intermediate stage in EFT and 33% in JPMR. 20% in EFT and 27% in JPMR were at High stage. 7% in EFT were at intermediate risk stage, metastatic stage and at third stage. 7% in JPMR were at stage 4 which shows that there is no significant difference in the stage of cancer of participants in both the groups. The investigator was unable to find a similar relation in studies done earlier.

PHASE OF TREATMENT

In the current study, Phase of treatment has been divided into 4 phases. In EFT group, 53% were in intensive phase, 20% of participants were in maintenance and induction phase and 7 % in consolidation phase. In JPMR group, 40% were in induction phase, 27% in intensive phase, 20% in consolidation phase and 13% in maintenance phase which shows that there is no significant difference in the phase of treatment of participants in both the groups.Another

which shows comparable results with our study is by Debra P. Shockey[117] et al (2013), out of the 12 participants, 25% (3/12) were children with disease relapse undergoing re-induction therapy and 75% (9/12) of the children were recently diagnosed and undergoing initial induction therapy.

EFT AND JPMR ON PAIN SEVERITY

In our current study, comparison between EFT and JPMR group after five consequent follow up sessions, one session per day, showed significant difference between pre- and post-pain severity test. In the EFT group the mean difference between pre- and post-intervention was 2.41. In the JPMR group the mean difference between pre- and post-intervention was 1.10. The findings thus indicate greater significant difference in EFT group as compared to JPMR. Since EFT also caters to the emotional experiences underlying the pain or surfacing after the painful medical procedures and side effects, it can be more beneficial to directly target these negative emotions which is not evident in JPMR technique.

Similar results were found in a study done by Ortner[67] et al. (2014) where EFT was shown to significantly reduce pain severity with effect maintained at one month; patients' ability to live with pain and negative thinking around pain was also significantly reduced; and improvement was maintained at one- and six-month follow-ups (Ortner, Palmer-Hoffman, & Clond, 2014).

Our study is in concordance with another study done by Donna Batch[77] et al. (2019)where workshop participants pain was found to be reduced by 57% ($p<0.0001$) (Bach, Groesbeck, Stapleton, Sims, Blickheuser & Church, 2019).

The findings are consistent with the study done by Atun Raudotul Ma'rifah[69] et al. (2005) where the result showed that in experimental group with fingerhold relaxation, the correlation value was 0.671 and R-square value was 45%. Furthermore, the correlation value of experimental groups using SEFT was 0.874 and R square was 76%. In conclusion, SEFT was found to be effective to decrease the pain on patient with post caesarean section.

EFT AND JPMR ON PAIN INTEREFERENCE

In our current study, comparison between EFT and JPMR group after five consistent follow up sessions, one session per day, showed the mean difference in pre- and post-pain interference test. In the EFT group the mean difference between pre- and post-intervention was 1.91. In the JPMR group the mean difference between pre- and post-intervention was 0.63 The findings thus indicate greater significant difference in EFT group as compared to JPMR. Since EFT is known to combine somatic and cognitive elements, it may have shown better improvement in pain interference in the EFT group.

The results of our study are supported by a study done by Bougea AM [62] et al. (2013), where the mean frequency of EFT performed by the subjects was 85 times (SD_18) during the two-month intervention period. The mean frequency of EFT was highly negatively correlated with the frequency of headaches (Pearson 0.780) and the intensity of headaches (Pearson 0.660); More specifically, the linear regression models indicated that applying the EFT technique 10 times per month decreased the headache frequency by 0.64 episodes per month (95% confidence interval [CI] .37, .91, *P* .001) and also decreased the intensity of the disease by 0.53 times (95% CI .22, .84, *P* .002).

In another study conducted by Hacer Alan Dikmen [106] et al. (2018), the mean difference between in-group scores of pain severity (p ¼ .001) and the effects of pain on daily life (p ¼ .001) detected at the third and eighth weeks was also found to be significant. Mean difference found at the 12th week for pain severity (p ¼ .013) and the effects of pain on daily life (p ¼ .017) was statistically significant for PMR group.

EFT AND JPMR ON PHYSICAL SYMPTOM DISTRESS

In our current study, mean difference in pre- and post-physical symptom subscale (MSAS PHY) in EFT was 2.03 and 0.68 in JPMR which shows greater significant difference in EFT group as compared to JPMR. Since it is known that perception of pain and discomfort is also altered by our emotional state, Emotional Freedom Technique can directly target those negative emotional experiences by tapping on

them along with cognitive restructuring, thus proving it more beneficial as compared to JPMR.

Study done by Church et al.[65] (2013) showed statistically significant improvements in fatigue (p = 0.008; p = 0.033) occurred at both 6 and 12 weeks, respectively, compared to baseline using EFT. In addition, mean fatigue interference and global scores, numbers of hot flushes and the hot flush problem rating score decreased at 6 and/or 12 weeks. Another study by Stapleton[55] et al. (2016) on the Lived Experience of Chronic Pain and the Impact of Brief Emotional Freedom Techniques (EFT) supported our study and showed that paired samples t-tests revealed a significant decrease in the severity (– 12.04%, p = 0.044) and impact (–17.62%, p = 0.008) of participants' pain from pretest to post test, and a significant improvement in their overall psychological distress from pretest to posttest (–36.67%, p < 0.001). There was also a significant improvement in participants' depression (–29.86%, p = 0.007), anxiety (–41.69%, p < 0.001), and stress (–38.48%, p = 0.001), from pretest to posttest. A significant association was found between pain and psychological distress.

EFT AND JPMR ON PSYCHOLOGICAL SYMPTOM DISTRESS

In the current study, mean difference in pre- and post- psychological symptom subscale (MSAS PSY) in EFT was 2.01 and 0.58 in JPMR which shows greater significant difference in EFT group as compared to JPMR. Since EFT incorporates elements of acceptance and cognitive therapy, it may have shown more improvement in psychological symptom distress as compared to JPMR which concentrates only on relaxation of specific muscle groups and not the maladaptive cognitions that might be causing the psychological distress.

The results are in concordance with a study done by Sezgin & Özcan[56], 2004, where both groups showed a significant decrease in test-taking anxiety, but the decrease for the EFT group (mean pre-treatment score of 53.9 decreased to 33.9) was significantly greater than the decrease (56.3 to 44.9) for the PMR group (p < .05).

In another study by Hui-Yong Kwaka[78] et al. (2019), results showed that EFT (n=15) and PMR (n=16) improved Hwabyung symptoms (13.95%and 11.46%, respectively), state anxiety (12.57% and 12.64%, respectively), and depression (32.11%and 18.68%, respectively) ($p<0.05$ for all). Trait anger improved in EFT group (13.4%, $p=0.004$).

EFT AND JPMR ON GLOBAL DISTRESS INDEX

In our present study, the mean difference in pre and post- global distress index(MSAS GDI) in EFT was 1.75 and 0.63 in JPMR which shows greater significant difference in EFT group as compared to JPMR.

Our study is in concordance of a study done by Donna Batch[77] (2019) which showed significant declines in Post-test, in anxiety (40%), depression (35%), posttraumatic stress disorder (32%), pain (57%), and cravings (74%), all P < .000. Significant improvements were found in RHR (8%, P ¼ .001), cortisol (37%, P < .000), systolic BP (6%, P ¼ .001), and diastolic BP (8%, P < .000). Positive trends were observed for HRV and HC and gains were maintained on follow-up, indicating EFT results in positive health effects as well as increased mental well-being.

In another study by Stewart et al. [64] (2013), significant improvement was found in overall psychological health and physical functioning. There was a significant reduction in the mean scores from baseline to immediately post intervention ($p = 0.009$) and again at the 4 week follow-up ($p = 0.005$). The size of the immediate effect was sustained at follow-up ($p = 0.65$).

In another study by Rachel Rogers[118] et al. (2015), post-test stress symptoms in college students were reduced in the EFT group by 39.3% and in the sham acupressure group by 8.1% ($p < .001$), demonstrating that the stimulation of actual points is superior to sham points even when all other components of treatment remain identical.

In a study by Gunilla Brattberg[57]*, (2008)* upon completion of the an 8-week EFT treatment program. The individuals in the wait-listed group were influenced by their pain to a “very high degree” both before and after the study period (P=.02). A reduction in pain, stress and tension

was also observed in the intervention group compared to the wait-listed group (P=.02).

The effectiveness of progressive muscle relaxation and interactive guided imagery as a pain-reducing intervention in advanced cancer patients, a study conducted by Giulia De Paolisa[119] et al, (2018) showed the Pain Intensity Difference (NRS at T3-NRS at T1) was 1.83 in group A and 0.55 in group B and was significant in both groups (p < 0.0001). The mean Total Symptom Distress Score declined by 8.83 in group A and by 1.84 in group B. The results of this trial suggest that PMR−IGI may be considered as an effective adjuvant in alleviating pain-related distress in terminal cancer patients.

Meta-Analytical Review By Karin Luebbert[92] (2001) showed the effectiveness of relaxation training among cancer patients in acute treatment in various empirical studies (e.g. Burish and Lyles, 1981; Morrow, 1986; Cotanch and Strum, 1987; Bridge et al., 1988). Qualitative reviews have been published focussing on the special use of relaxation training in reducing the side effects of cancer treatment (Redd and Andrykowski, 1982).

EFT on Pain and Symptom Distress

Table 15 and Figure 15 shows the mean difference in pain and symptom distress after pre- and post-EFT intervention. Mean difference after pre- and post-intervention on pain severity was 2.41, on pain interference was 1.91, on physical symptom distress was 2.03, on psychological distress was 2.01 and on global distress index was 1.75, which shows that there is a significant difference in pain and symptom distress management after post intervention assessment.

A study in concordance with our study results, done by Donna Batch[77] (2019) on Clinical EFT (Emotional Freedom Techniques) Improves Multiple Physiological Markers of Health, showed significant declines in Post-test, in anxiety (40%), depression (35%), posttraumatic stress disorder (32%), pain (57%), and cravings (74%), all P < .000. Significant improvements were found in RHR (8%, P ¼ .001), cortisol (37%, P < .000), systolic BP (6%, P ¼ .001), and diastolic BP (8%, P < .000). Positive trends were observed for HRV and HC and gains were

maintained on follow-up, indicating EFT results in positive health effects as well as increased mental well-being.

In another study by Stewart[64]et al. (2013), significant improvement was found in overall psychological health and physical functioning. There was a significant reduction in the mean scores from baseline to immediately post EFT intervention (p = 0.009) and again at the 4 week follow-up (p = 0.005). The size of the immediate effect was sustained at follow-up (p = 0.65).

JPMR on Pain and Symptom Distress

Table 16 and Figure 16 shows the mean difference in pain and symptom distress after pre- and post-JPMR intervention. Mean difference after pre- and post-intervention on pain severity was 1.10, on pain interference was 0.63, on physical symptom distress was 0.68, on psychological distress was 0.58 and on global distress index was 0.63, which shows that there is a significant difference in pain and symptom distress management after post intervention assessment.

A study in concordance with our study was done by Charalambous A[102] et al. (2016) on Guided Imagery and Progressive Muscle Relaxation as a Cluster of Symptoms Management Intervention in Patients Receiving Chemotherapy, results show that pain 4.2(2.5) - 2.5(1.6), Fatigue 27.6(4.1) - 19.3(4.1), HRQoL 54.9(22.7) - 64.5(23), Control: Pain 3.5(1.7) - 4.8(1.5), Fatigue 28.7(4.1) - 32.5(3.8), HRQoL 51.9(22.3)- 41.2(24.1)]. Nausea, vomiting and retching occurred significantly less often in the intervention group [pre-post: 25.4(5.9)-20.6(5.6) compared to the control group (17.8(6.5)- 22.7(5.3) (F = 58.50 p<0.0001). More patients in the control group (pre:n = 33-post:n = 47) were found to be moderately depressed compared to those in the intervention group (pre:n = 35-post:n = 15) (X2 = 5.93; p = 0.02). This study provided evidence that the combination of GI and PMR can be effective in the management of a cluster of symptoms in cancer patients receiving chemotherapy.

Another study which showed similar results was conducted by Good M[90] et al. (1999) on relaxation therapy which has been shown to provide pain relief by decreasing anxiety, lowering muscle tension and

distracting attention. Controlling for pretest sensation and distress, orthogonal a priori contrasts and multivariate analysis of covariance indicated that the three treatment groups had significantly less pain than the controls, (P = 0.028-0.000) which was confirmed by the univariate analysis of covariance (P = 0.018-0.000). Post hoc multivariate analysis revealed that the combination group had significantly less sensation and distress of pain than the control group on all post-tests (P = 0.035-0.000), and the relaxation and music groups had significantly less on all tests (P = 0.022-0.000) except after ambulation.

CORRELATIONS

Age and Pain Severity

Table 17 and Figure 17 correlates the relationship between Age and Pain Severity with Pearson's correlation value 0.393 which shows more the age more will be the pain severity. The investigator was unable to find a similar relation in studies done earlier.

Age and Pain Interference

Table 18 and Figure 18correlates the relationship between Age and Pain Interference with Pearson's correlation value 0.519 which shows more the age more will be the pain severity. The investigator was unable to find a similar relation in studies done earlier.

Pain Severity and Pain Interference

Table 19 and Figure 19correlates the relationship between Pain Severity and Pain Interference with Pearson's correlation value 0.835 which shows more the severity of pain more will be the pain interference.

Our results are in corroboration with a study done by Simon[120] et al. (2020), where association between pain severity and interference with daily life was found, which showed that the higher the pain, the bigger the interference (estimated regression coefficient = 1.01 [95% CI 0.98-1.13]).

In a study done by Harris[121] et al. different results were found from our current study. Their results confirmed a non-linear relationship between cancer pain severity and functional interference. The optimal CP for

worst and average pain was CP4, 6 (mild 1–4, moderate 5–6, and severe 7–10).

In another study done by Vetter[122] et al. (2013), significant correlations were observed between paediatric functional disability and patient chronic pain intensity ($r \geq 0.30$, $P < 0.05$) which supports our current findings.

Our study is also in collaboration with a study done by Wolters[123] et al. (2013), which found that seventy-three percent (43 out of 59) of caregivers rated that pain interfered “a little” to “a lot” with their child’s daily functioning in the past month, which was not significantly different between children (83%; 15 out of 18) and adolescents (68%; 28 out of 41) (X2¼ns). By self-report, 59% (24 out of 41) of the adolescents rated having pain that interfered “a little” to “a lot” with their functioning in the past month.

Pain Severity and Symptom Distress

Table 20 and Figure 20correlates the relationship between Pain Severity and physical symptom subscale (MSAS PHY), psychological symptom subscale (MSAS PSY), global distress index (MSAS GDI) and average of all symptoms (MSAS) with Pearson’s correlation value 0.544, 0.462, 0.642 and 0.530 respectively which shows more the pain severity more will be the symptom distress.

Our results are supported by a study done by Charalambous A[124] et al., (2019), results show that the three mediators in a serial causal order fully mediate the relationship between pain and HRQoL (IEoverall=−0.384, 95% CI: LL=−0.51 to UL=−0.284) and the ratio of the overall indirect effect to the total effect is 0.8315 (95% CI: LL=0.5683 to UL=1.1718. This work provides evidence that targeting fatigue, anxiety and depression may have a meaningful effect on pain as a related symptom and potentially have a positive impact on HRQoL of patients with breast and prostate cancer.

In another study in concordance with our study was done by Patton M et al. [125] (2020),found thatparents with chronic pain (Mean = 0.51, SD = 0.47) reported significantly more severe psychological symptoms

than parents without chronic pain (M = 0.32, SD = 0.41), F(1, 116) = 5.07, p = 0.026.

Pain Interference and Symptom Distress

Table 21 and Figure 21correlates the relationship between Pain Interference and physical symptom subscale (MSAS PHY), psychological symptom subscale (MSAS PSY), global distress index (MSAS GDI) and average of all symptoms (MSAS) with Pearson's correlation value 0.508, 0.612, 0.683 and 0.529 respectively which shows more the pain interference more will be the symptom distress.

Our results are in concordance with another study done by Vetter[122] et al. (2013) which showed that paediatric functional disability was significantly associated with patient chronic pain intensity (P = 0.025), patient anxiety (P = 0.021), patient pain coping (P = 0.009), and parent functional disability (P = 0.027).

LIMITATIONS

1. According to the knowledge of the investigator, there are no previous studies which have used Emotional Freedom Technique (EFT) and Jacobson's Muscle Relaxation (JPMR) on paediatric oncology population for pain and symptom distress management. Therefore, further research needs to be done to generalize the results.2. The sample size of the present study was limited to 30 participants.

3. There was also lack of control of extraneous variables such as impact of analgesic medications and treatment procedures on pain and symptom distress.

4. Follow up sessions were limited to only 5 sessions, therefore impact of psychological interventions used in study in the long run could not be seen.

SUMMARY AND CONCLUSION

The present study focuses on the effectiveness of psychological interventions, namely Emotional Freedom Technique (EFT) and Jacobson's Progressive Muscle (JPMR) Technique on Pain and Symptom Distress Management among Paediatric Oncology Patients. In the present study we noted the following points:

- Mean age of participants in EFT group was 12.93 and in JPMR group was 11.53.
- Distribution of participants in terms of education ranged from 2nd to 12th standard.
- Distribution of participants in terms of gender in the current study includes 20% females in EFT group and 47% in JPMR group. 80% Males are in EFT group and 53% in JPMR group.
- In terms of Family Type, 27% were from joint family and 73% from nuclear family in EFT group and 47% from joint family and 53% from nuclear family in JPMR group.
- In the EFT group, 67% were from Rural and 33% from Urban background. In JPMR group, 53% were from Rural and 47% from Urban background.
- In the EFT group, 53% were from Lower Middle, 13% from Upper Lower and 33% from Upper Middle Socio-Economic Status. In JPMR group 47% were from Lower Middle, 33% from Upper Lower and 20% from Upper Middle Socio-Economic Status.
- In EFT group, 53% were diagnosed as ALL, 20% as Eurings and Osteosarcoma and 7% as CA Nasopharynx and In JPMR group 53% as ALL and 7% as ALCL, AML, Burkitt Lymhoma, Ewing Sarcoma, osteosarcoma and germ cell.
- 33% were at Non-Metastatic stage in EFT and 13% in JPMR, 27% were at Intermediate stage in EFT and 33% in JPMR. 20% in EFT and 27% in JPMR were at High stage. 7% in EFT were at intermediate risk stage, metastatic stage and at third stage. 7% in JPMR were at stage 4.

- In EFT group, 53% were in intensive phase, 20% of participants were in maintenance and induction phase and 7 % in consolidation phase. In JPMR group, 40% were in induction phase, 27% in intensive phase, 20% in consolidation phase and 13% in maintenance phase.
- Mean difference after pre- and post-intervention was greater in EFT group (2.41) than in JPMR group on Pain Severity (1.10).
- Mean difference after pre- and post-intervention was greater in EFT group (1.91) than in JPMR group on Pain Interference (0.63).
- Mean difference after pre- and post-intervention was greater in EFT group (2.03, 2.01) than in JPMR group (0.68, 0.58) on Physical and Psychological Symptom Distress.
- Mean difference after pre- and post-intervention was greater in EFT group (1.75) than in JPMR group (0.63) on Global Distress Index.
- Significant association was seen between age and pain severity (r= 0.393)
- Significant association was seen between age and pain interference (r= 0.519)
- Pain severity was correlated with Pain interference (r= 0.835).
- Pain Severity was correlated with Physical symptom distress and Psychological symptom distress respectively (r= 0.544, 0.462).
- Pain Severity was correlated with Global Distress Index (r= 0.642).
- Pain Interference related with Physical symptom distress and Psychological symptom distress (r = 0.508, 0.612)
- Pain Interference was correlated with Global Distress Index (r= 0.642).

Therefore, the present study highlights the importance of psychological interventions in pain and symptom distress management among paediatric oncology patients. The findings of the study suggest that both the psychological interventions, Emotional freedom technique (EFT) and Jacobson's Progressive Muscle Relaxation Technique (JPMR) are effective in management of cancer related pain and symptom distress caused by chemotherapy side effects and other medical procedures as part of treatment of cancer. Results have also

shown that EFT might be a better therapeutic intervention as compared to JPMR for pain and symptom distress management.

The psychological interventions may further help in improvement of better treatment compliance and reduce the medical treatment delays due to child distress and non-compliance. It would be beneficial for future research to repeat trials with larger sample size, incorporating the same type of interventions, pain measurement times, assessment instruments, and outcome measurements. Further research is needed to better understand the role and importance of psychological interventions with paediatric oncology patients.

FUTURE DIRECTIONS

The evidence evaluated here, demonstrating that psychological interventions, EFT and JPMR having significant impact on pain and symptom distress management among paediatric oncology patients, can be reinforced with studies using larger sample sizes, multisession treatments, and more stringent designs. Further research into the mechanisms that allow the rapid responses reported in clinical trials will give clinicians greater confidence in applying the techniques. Meanwhile, with growing numbers of clinicians introducing EFT into their practices, research on the integration of acupoint tapping with conventional treatment approaches, such as cognitive behaviour therapy and psychodynamic psycho therapy, will provide guidance on a variety of practical clinical questions. Medical trials could explicitly identify EFT's and JPMR's utility as a medical intervention for conditions such as hypertension, diabetes, cancer, and cardiac events, all of which are stress- related.

At present, clinical treatment is widely used for cancer patients. However, child and adolescent cancer patients often experience various side effects, which cause short-term or long-term discomfort, both physically and psychologically. Therefore, research using various psychological interventions and their effectiveness needs to be done with larger samples of paediatric oncology patients for recognition of its evidence and generalizability.

BIBLIOGRAPHY

1. Sarafino EP, Smith TW. Health psychology: Biopsychosocial interactions. John Wiley & Sons; 2014.

2. Kazak AE, Noll RB. The integration of psychology in pediatric oncology research and practice: Collaboration to improve care and outcomes for children and families. American Psychologist. 2015;70(2):146-58.

3. Hain, Richard, Pain in Pediatric Oncology, 2012, Journal of Pediatric Psycho-Oncology: Psychosocial Aspects and Clinical Interventions: Second Edition.

4. Andrew B. Cambridge Handbook Of Psychology, Health, And Medicine. Cambridge, UK: Cambridge University Press; 1997.

5. Bearison DJ, Mulhern RK. (Eds.), Pediatric psychooncology: Psychological perspectives on children with cancer. Oxford University Press.

6. McGrath PA, Gillsepie J. Pain assessment in children and adolescents," in Handbook of Pain Assessment, D. C. Turk and R. Melzack, Eds., Gilford Press, New York, NY, USA, 2nd edition; 2001. p. 97-118.

7. M. C. Savedra, M. D. Tesler, W. L. Holzemer, and J. A. Ward, Adolescent Pediatric Pain Tool (APPT): Preliminary User's Manual, University of California, San Francisco, Calif, USA, 1989.

8. American Pain Society Task Force on Pain in InfantsChildren AA. The assessment and management of acute pain in infants, children, and adolescents. Pediatrics-Springfield-. 2001;108(3):793-7.

9. Levy MH, Chwistek M, Mehta RS. Management of chronic pain in cancer survivors, Cancer J. 2008;14(6):401-9.

10. The WHO Pain Ladder Psychosocial Aspects of Pediatric Oncology. Edited by S. Kreitler and M. Weyl Ben Arush & 2004 John Wiley & Sons Ltd: ISBN 0 471 499390.

11. Hain RD, Hardcastle A, Pinkerton CR, Aherne GW. Morphine and morphine-6-glucuronide in the plasma and cerebrospinal fluid of children. British Journal of Clinical Pharmacology 1999; 48:37–42.

12. Mashayekhi SO, Ghandforoush-Sattari M, Routledge PA, Hain RD. Pharmacokinetic and pharmacodynamic study of morphine and morphine 6 - glucuronide after oral and intravenous administration of morphine in children with cancer. Biopharmaceutics and Drug Disposition. 2009;30:99–106.
13. Mashayekhi SO, Hain RD, Buss DC, Routledge PA. Morphine in children with cancer: impact of age, chemotherapy and other factors on protein binding. Journal of Pain and Palliative Care Pharmacotherapy. 2007; 21:5–12.
14. Vargas-Schaffer G. Is the WHO analgesic ladder still valid? Twenty-four years of experience. Canadian Family Physician. 2010;56:514-7.
15. Distress in children with cancer undergoing medical procedures: Developmental considerations. J Consult Clin Psycho. 1980;48:356-65.
16. Adams J: A methodological study of pain assessment in Anglo and Hispanic children with cancer, in Tyler D, Krane E (eds): Advances in Pain Research Therapy, vol. 15. New York, NY, Raven, 1990, pp 43-51.
17. Bradlyn AS, Harris CV, Ritchey AK, Olsen BR, Heffer RW, Lewallen J, et al. Children's reactions to invasive medical procedures: The potential importance of procedure, age, and physical restraint. Journal of Psychosocial Oncology. 1993;11(2):1-8.
18. Fowler-Kerry, S: Adolescent oncology survivors' recollection of pain, in Tyler D, Krane E (eds): Advances in Pain Research Therapy, vol. 15. New York, NY, Raven, 1990, pp 365-371.
19. Jay SM, Ozolins M, Elliott CH, Caldwell S. Assessment of children's distress during painful medical procedures. Health psychology. 1983;2(2):133.
20. Woodgate R, Kristjanson L: Young children's behavioral responses to acute pain: Strategies for getting better. J Adv Nurs. 1995;2:243-249.
21. Zeltzer L, LeBaron S, Richie D. Can children understand and use a rating scale to quantify somatic symptoms? Assessment of nausea and vomiting as a model. J Consult Clin Psycho. 1988;56:567-572.

22. Gobel B, Donovan M: Depression and anxiety. Semin Oncol Nurs. 1987;3:267-276.
23. Neville K: Psychological distress in adolescents with cancer. J Pediatr Nurs. 2003;11:243-251
24. Van Dongen-Melman J, Pruyn J, Van Zanen G. Coping with childhood cancer: A conceptual view. J Psychosoc Oncol. 1986;4:147-161.
25. Aamodt A, Cirassi-Herwehe S, Farrell R: The child's view of chemically induced alopecia, in Leininger M (ed): Care: The Essence of Nursing and Health. Thorofare, NJ, Slack, 1984, pp 217-231
26. Holland JC, Andersen B, Breitbart WS. Distress management. J Natl Compr Canc Netw. 2013;11(2):190–209.
27. Holland JC, Jacobsen PB, Riba MB. NCCN: distress management. Cancer Control. 2001;8(6 Suppl. 2):88–93.
28. Holland JC, Bultz BD. The NCCN guideline for distress management: a case for making distress the sixth vital sign. J Natl Compr Canc Netw. 2007;5(1):3–7.
29. Christensen, A. J., & Antoni, M. H. (Eds.). (2002). The Blackwell Series In Health Psychology & Behavioural Medicine. Chronic Physical Disorders: Behavioral Medicine's Perspective. Blackwell Publishing.
30. Smeltzer CS, Bare GB, Hinkle LJ, Cheever HK. Brunner and Suddarth's. Text book of medical surgical nursing. 10thed. New Delhi (India): Lippincott company. 2008; p. 383.
31. Ogden J. Health psychology: A textbook. Buckingham: Open University Press. 2000.
32. Lepore SJ, Coyne JC. Psychological interventions for distress in cancer patients: a review of reviews. Ann Behav Med. 2006;32(2):85–92.
33. Coyne JC, Lepore SJ, Palmer SC. Efficacy of psychosocial interventions in cancer care: evidence is weaker than it first looks. Ann Behav Med. 2006;32(2):104–10.,
34. Andrykowski MA, Manne SL. Are psychological interventions effective and accepted by cancer patients? I. Standards and levels of evidence. Ann Behav Med. 2006;32(2):93–7.

35. Manne SL, Andrykowski MA. Are psychological interventions effective and accepted by cancer patients? II. Using empirically supported therapy guidelines to decide. Ann Behav Med. 2006;32(2):98–103.
36. Andersen BL. Biobehavioral outcomes following psychological interventions for cancer patients. J Consult Clin Psychol. 2002;70(3):590–610.
37. Blake-Mortimer J, Gore-Felton C, Kimerling R, Turner-Cobb JM, Spiegel D. Improving the quality and quantity of life among patients with cancer: a review of the effectiveness of group psychotherapy. European Journal of Cancer. 1999;35(11):1581-6.
38. Ross L, Boesen EH, Dalton SO, Johansen C. Mind and cancer: does psychosocial intervention improve survival and psychological well-being?. European journal of cancer. 2002;38(11):1447-57.
39. Barsevick AM, Sweeney C, Haney E, Chung E. A systematic qualitative analysis of psychoeducational interventions for depression in patients with cancer. Oncol Nurs Forum. 2002;29(1):73–84.
40. Newell SA, Sanson-Fisher RW, Savolainen NJ. Systematic review of psychological therapies for cancer patients: overview and recommendations for future research. Journal of the National Cancer Institute. 2002;94(8):558-84.
41. Meyer TJ, Mark MM. Effects of psychosocial interventions with adult cancer patients: a meta-analysis of randomized experiments. Health Psychol. 1995;14(2):101–8.,
42. Sheard T, Maguire P. The effect of psychological interventions on anxiety and depression in cancer patients: results of two meta-analyses. Br J Cancer. 1999;80(11):1770–80.,
43. Devine EC, Westlake SK. The effects of psychoeducational care provided to adults with cancer: meta-analysis of 116 studies. Oncol Nurs Forum. 1995;22(9):1369–81.
44. Andrykowski MA, Manne SL. Are psychological interventions effective and accepted by cancer patients? I. Standards and levels of evidence. Ann Behav Med. 2006;32(2):93–7.

45. Blake-Mortimer J, Gore-Felton C, Kimerling R, Turner-Cobb JM, Spiegel D. Improving the quality and quantity of life among patients with cancer: a review of the effectiveness of group psychotherapy. Eur J Cancer. 1999;35(11):1581–6.,

46. Barsevick AM, Sweeney C, Haney E, Chung E. A systematic qualitative analysis of psychoeducational interventions for depression in patients with cancer. Oncol Nurs Forum. 2002;29(1):73–84.

47. Meyer TJ, Mark MM. Effects of psychosocial interventions with adult cancer patients: a meta-analysis of randomized experiments. Health Psychol. 1995;14(2):101–8.

48. Devine EC, Westlake SK. The effects of psychoeducational care provided to adults with cancer: meta-analysis of 116 studies. Oncol Nurs Forum. 1995;22(9):1369–81.

49. Holland JC, Jacobsen PB, Riba MB. NCCN: distress management. Cancer Control. 2001;8 (6 Suppl. 2):88–93.

50. Redd, W.H., & Jacobson, P.B. (2001). Behavioural intervention in comprehensive cancer care. In A.S. Baum, T.A Ravenson & J.E. Singer (Eds.), Handbook of Health Psychology (PP.757-776). Mahwah, NJ: Lawrence Erlbaum Associates.

51. Molassitosis A, Yung HP, Yam BM, Chan FY, Mok TS. A pilot study of the use of progressive muscle relaxation training in the management of post chemotherapy nausea and vomiting. European Journal of Cancer Care (England). 2000;(4):230-234.

52. Feinstein, David. “Acupoint stimulation in treating psychological disorders: Evidence of efficacy.” Review of General Psychology. 2012;16:364-80.

53. Stapleton P, Sheldon T, Porter B. Practical application of emotional freedom techniques for food cravings. The International Journal of Healing and Caring. 2012;12(3):1–8.

54. Dhond RP, Kettner N, Napadow V. Neuroimaging acupuncture effects in the human brain. The Journal of Alternative and Complementary Medicine. 2007;13(6):603-16.

55. Stapleton PB, Chatwin H, Sheppard L, McSwan J. The lived experience of chronic pain and the impact of brief Emotional Freedom

Techniques (EFT) group therapy on coping. Energy Psychology: theory, research, practice, training. 2017;8(2):18-28.
56. Sezgin N, Özcan B. Comparison of the effectiveness of two techniques for reducing test anxiety: EFT & progressive muscular relaxation. InPoster session presented at the Sixth Annual Energy Psychology Conference, Toronto, Ontario, Canada 2004.
57. Brattberg G. Self-administered EFT (Emotional Freedom Techniques) in individuals with fibromyalgia: a randomized trial. Integr Med. 2008;7:30-35.
58. Bair CC. The heart field effect: Synchronization of healer-subject heart rates in energy therapy. Adv Mind Body Med. 2008;23(4):10-9.
59. Hodge PM, Jurgens CY. A pilot study of the effects of Emotional Freedom Techniques in psoriasis. Energy Psychol Theory Res Treat. 2011; 3:13-24.
60. Church D, Piña O, Reategui C, Brooks A. Single-Session Reduction of the Intensity of Traumatic Memories in Abused Adolescents After EFT: A Randomized Controlled Pilot Study. Traumatology. 2012;18(3):73-79.
61. Church D, Yount G, Brooks A. The effect of emotional freedom techniques on stress biochemistry: A randomized controlled trial. The Journal of Nervous and Mental Disease. 2012;200(10):891-6.
62. Bougea AM, Spandideas N, Alexopoulos EC, Thomaides T, Chrousos GP, Darviri C. Effect of the Emotional Freedom Technique on perceived stress, quality of life, and cortisol salivary levels in tension-type headache sufferers: a randomized controlled trial. Explore (NY). 2013; 9:91-99.
63. Stapleton P, Church D, Sheldon T, Porter B, Carlopio C. Depression symptoms improve after successful weight loss with emotional freedom techniques. International Scholarly Research Notices. 2013;2013.
64. Stewart A, Boath E, Carryer A, Walton I, Hill L, Phillips D, Dawson K. Can matrix reimprinting using EFT be effective in the treatment of emotional conditions? Energy Psychology: Theory, Research, & Treatment, in Press. 2013.

65. Church D, Brooks AJ. CAM and energy psychology techniques remediate PTSD symptoms in veterans and spouses. Explore. 2014;10(1):24-33.
66. Baker BS, Hoffman CJ. Emotional Freedom Techniques (EFT) to reduce the side effects associated with tamoxifen and aromatase inhibitor use in women with breast cancer: a service evaluation. European Journal of Integrative Medicine. 2015;7(2):136-42.
67. Ortner N, Palmer-Hoffman J, Clond M. Effects of Emotional Freedom Techniques (EFT) on the reduction of chronic pain in adults: a pilot study. Energy Psychol Theory Res Treat. 2014;6(2).
68. Babamahmoodi A, Arefnasab Z, Noorbala AA. Emotional freedom technique (EFT) effects on psychoimmunological factors of chemically pulmonary injured veterans. Iran Journal of Allergy, Asthma, and Immunological Disorders. 2015;14(1):37-47.
69. Atun Raudotul Ma'rifah, Rahmaya Nova Handayani, Pramesti Dewi Stikes Harapan Bangsa Purwokerto. The Effectiveness Of Fingerhold Relaxation Technique And Spiritual Emotional Freedom Technique (Seft) To The Pain Intensity Scale On Patients With Post Caesarean Section, 2015.
70. Rogers R, Sears S. Emotional Freedom Techniques (EFT) for Stress in Students: A Randomized Controlled Dismantling Study. Energy Psychology: Theory, Research, and Treatment. 2015;7(2):26-32.
71. Lee JH, Chung SY, Kim JW. A comparison of Emotional Freedom Techniques–Insomnia (EFT-I) and Sleep Hygiene Education (SHE) in a geriatric population: A randomized controlled trial. Energy Psychology: Theory, Research, and Treatment. 2015;7(1):1–8.
72. Church D, Nelms J. Pain, range of motion, and psychological symptoms in a population with frozen shoulder: a randomized controlled dismantling study of clinical EFT (emotional freedom techniques). Arch Sci Psychol. 2016; 4:38-48.
73. Church D, Sparks T, Clond M. EFT (Emotional Freedom Techniques) and resiliency in veterans at risk for PTSD: A randomized controlled trial. Explor J Sci Heal. 2016; 12:355-365

74. Patterson SL. The effect of emotional freedom technique on stress and anxiety in nursing students: A pilot study. Nurse Educ Today. 2016;40: 104-10.
75. Gaesser AH, Karan OC. A Randomized Controlled Comparison of Emotional Freedom Technique and Cognitive-Behavioral Therapy to Reduce Adolescent Anxiety: A Pilot Study. J Altern Complement Med. 2017;23(2):102-108.
76. Kalla M, Simmons M, Robinson A, Stapleton P. Emotional freedom techniques (EFT) as a practice for supporting chronic disease healthcare: a practitioners' perspective. Disabil Rehabil. 2018;40: 1654-1662.
77. Bach D, Groesbeck G, Stapleton P, Sims R, Blickheuser K, Church D. Clinical EFT (Emotional Freedom Techniques) Improves Multiple Physiological Markers of Health. Journal of Evidence-Based Integrative Medicine. 2019;24.
78. Effect of the Emotional Freedom Techniques on anger symptoms in Hwabyung patients: A comparison with the progressive muscle relaxation technique in a pilot randomized controlled trial by Hui-YongKwaka,Eun-JiChoib,Jong-WooKimc,Hyo-WeonSuha,Sun-YongChungc, Published by Elsevier Inc. 2019
79. Robin Bilazarian, LCSW, DCSW, DCEP, EFT Certified Master EFT Trainer and Margaret Hux, MSc, Dip SP, Health Economist and Registered Psychotherapist (Qualifying) • Aug 12, 2020.
80. Melzack R and Chapman CR: Psychologic aspects of pain. Postgrad Med. 1973;53:69-75.
81. Stapleton P, Church D, Sheldon T, Porter B, Carlopio C. Depression symptoms improve after successful weight loss with emotional freedom techniques. ISRN Psychiatry. 2013 article ID 573532.
82. Standley JM: Music research in medical/dental treatment: Meta-analysis and clinical applications. J Music Ther 23: 56-122, 1986-for chronic pain: A critical review. II. Operant conditioning, hypnosis, and cognitive-behavioral therapy. Pain. 1982;12:23-46.

83. Turk DC, Fernandez E. On the putative uniqueness of cancer pain: Do psychological principles apply? Behaviour Research and Therapy. 1981;28(1):1-13.
84. Turner JA. Comparison of group progressive-relaxation training and cognitive-behavioral group therapy for chronic low back pain. Journal of Consulting and Clinical Psychology. 1981;50(5):757–765.
85. Ceccio CM: Postoperative pain relief through relaxation in elderly patients with fractured hips. Orthop Nurs. 1984;3:11-19.
86. Levin RF, Malloy GB, Hyman RB. Nursing management of postoperative pain: use of relaxation techniques with female cholecystectomy patients. J Adv Nurs. 1987;12(4):463-72.
87. Broome ME, Lillis PP, McGahee TW, Bates T. The use of distraction and imagery with children during painful procedures. Oncol Nurs Forum. 1992;19(3):499-502.
88. Vasterling J, Jenkins RA, Tope DM, Thomas G. Cognitive distraction and relaxation training for the control of side effects due to cancer chemotherapy. Journal of Behavioral Medicine. 1993; 16:65–80.
89. Lekander M, Fürst CJ, Rotstein S, Hursti TJ, Fredrikson M. Immune effects of relaxation during chemotherapy for ovarian cancer. Psychother Psychosom. 1997;66(4):185-91.
90. Good M, Stanton-Hicks M, Grass JA, Cranston Anderson G, Choi C, Schoolmeesters LJ and Salman A: Relief of postoperative pain with jaw relaxation, music and their combination. Pain. 1999;81:163-172.
91. Kemper KJ, Wornham WL. Consultations for holistic pediatric services for inpatients and outpatient oncology patients at a children's hospital. Arch. Pediatric. Adolescents. Med. 2001; 155:449–54.
92.The Effectiveness Of Relaxation Training In Reducing Treatment-Related Symptoms And Improving Emotional Adjustment In Acute Non-Surgical Cancer Treatment: A Meta-Analytical Review Karin Luebberta, Bernhard Dahmeb And Monika Hasenbring. 2001.
93. Yoo HJ, Ahn SH, Kim SB, Kim WK, Han OS. Efficacy of progressive muscle relaxation training and guided imagery in reducing chemotherapy side effects in patients with breast cancer and in

improving their quality of life. Support Care Cancer. 2005;13(10):826-33.
94. Kwekkeboom KL, Wanta B, Bumpus M. Individual difference variables and the effects of progressive muscle relaxation and analgesic imagery interventions on cancer pain. J Pain Symptom Manage. 2008;36(6):604-15.
95. de Carvalho EC, Martins FT, dos Santos CB. A pilot study of a relaxation technique for management of nausea and vomiting in patients receiving cancer chemotherapy. Cancer nursing. 2007;30(2):163-7.
96. Crowe L, Chang A, Fraser JA, Gaskill D, Nash R and Wallace K: Systematic review of the effectiveness of nursing interventions in reducing or relieving post-operative pain. JBI Library Syst Rev. 2008;6:165-224.
97. Hakam M, Yetti K, Hariyati RT. Spiritual Emotional Freedom Technique Intervention to Reduce Pain in Cancer Patients. Makara Journal of Health Research. 2010;14:91-5.
98. Chang CW, Mu PF, Jou ST, Wong TT, Chen YC. The effectiveness of non-pharmacological interventions on fatigue in children and adolescents with cancer: a systematic review. JBI Libr Syst Rev. 2012;10(10):574-614.
99. Greer JA, Traeger L, Bemis H, Solis J, Hendriksen ES, Park ER, et al. A pilot randomized controlled trial of brief cognitive-behavioral therapy for anxiety in patients with terminal cancer. The oncologist. 2012;17(10):1337-45.
100. Topcu SY and Findik UY. Effect of relaxation exercises on controlling postoperative pain. Pain Manag Nurs. 2012; 13:11-7.
101. Tsitsi T, Charalambous A, Papastavrou E, Raftopoulos V. Effectiveness of a relaxation intervention (progressive muscle relaxation and guided imagery techniques) to reduce anxiety and improve mood of parents of hospitalized children with malignancies: A randomized controlled trial in Republic of Cyprus and Greece. Eur J Oncol Nurs. 2017; 26:9-18.

102. Charalambous A, Giannakopoulou M, Bozas E, Marcou Y, Kitsios P, Paikousis L. Guided Imagery And Progressive Muscle Relaxation as a Cluster of Symptoms Management Intervention in Patients Receiving Chemotherapy: A Randomized Control Trial. PLoS One. 2016;11(6):e0156911.
103. Pelekasis P, Matsouka I, Koumarianou A. Progressive muscle relaxation as a supportive intervention for cancer patients undergoing chemotherapy: A systematic review. Palliat Support Care. 2017;15(4):465-73.
104. Darweesh AE, Ebraheemsayied N, Ahmed Z. Effect of Relaxation Training Techniques AndPsychoeducational Program on Depression And Anxiety Among Cancer Patients. 2018.
105. Progressive muscle relaxation technique for pain management in post-cesaerean women. Indian J Obstet Gynecol Res. 2018;5:228-232.
106. Alan DikmenHA, Terzioglu F. Effects of Reflexology and Progressive muscle relaxation on pain, fatigue, and quality of life during chemotherapy in gynecologic cancer patients. Pain ManagNurs, 2019;20:47-53.
107. De Paolis G, Naccarato A, Cibelli F, D'Alete A, Mastroianni C, Surdo L, Casale G and Magnani C: The effectiveness of progressive muscle relaxation and interactive guided imagery as a pain-reducing intervention in advanced cancer patients: A multicentre randomised controlled non-pharmacological trial. Complement Ther Clin Pract. 2019;34:280-7.
108. Jong MC, Boers I, van Wietmarschen HA, Tromp E, Busari JO, Wennekes R, et al. Hypnotherapy or transcendental meditation versus progressive muscle relaxation exercises in the treatment of children with primary headaches: a multi-centre, pragmatic, randomised clinical study. Eur J Pediatr. 2019;178(2):147-154.
109. Wennekes R, Snoeck I, Bekhof J, Vlieger AM. Hypnotherapy or transcendental meditation versus progressive muscle relaxation exercises in the treatment of children with primary headaches: A multi-centre, pragmatic, randomised clinical study. Eur J Pediatric. 2019;178:147-154.

110. Charalambous A, Giannakopoulou M, Bozas E. Parallel and serial mediation analysis between pain, anxiety, depression, fatigue and nausea, vomiting and retching within a randomised controlled trial in patients with breast and prostate cancer. BMJ Open 2019;9: e026809.
111. Ju W, Ren L, Chen J, Du Y. Efficacy of relaxation therapy as an effective nursing intervention for post-operative pain relief in patients undergoing abdominal surgery: A systematic review and meta-analysis. Exp Ther Med. 2019;18(4):2909-2916.
112. Cleeland CS, Ryan KM. Pain assessment: Global use of the Brief Pain Inventory. Annals, Academy of Medicine, Singapore. 1994;23:129–38.
113. Lam, Wendy, Law, Chi, Fu, Yiu, Wong, Kam, Chang, Victor, Fielding, Richard, New insights in symptom assessment: the Chinese versions of the Memorial Symptom Assessment, Journal of pain and symptom management, 2008.
114. Bushra M,Ajaz A K. Jacobson Muscle Relaxation Technique (JPMR) (20 Min). JOJ Nurse Health Care. 2018;8(1):555726.
115. Coughtrey A, Millington A, Bennett S, Christie D, Hough R, Su MT, et al. The effectiveness of psychosocial interventions for psychological outcomes in pediatric oncology: a systematic review. Journal of pain and symptom management. 2018;55(3):1004-17.
116. Gaesser AH, Karan OC. A randomized controlled comparison of Emotional Freedom Technique and Cognitive-Behavioral Therapy to reduce adolescent anxiety: A pilot study. The Journal of Alternative and Complementary Medicine. 2017;23(2):102-8.
117. Shockey DP, Menzies V, Glick DF, Taylor AG, Boitnott A, Rovnyak V. Preprocedural distress in children with cancer: an intervention using biofeedback and relaxation. Journal of Pediatric Oncology Nursing. 2013;30(3):129-38..
118. Rogers R, Sears S. Emotional Freedom Techniques (EFT) for stress in students: A randomized controlled dismantling study. Energy Psychology: Theory, Research, and Treatment. 2015;7(2), 26-32.
119. Charalambous A, Giannakopoulou M, Bozas E, Marcou Y, Kitsios P, Paikousis L. Guided Imagery And Progressive Muscle Relaxation as

a Cluster of Symptoms Management Intervention in Patients Receiving Chemotherapy: A Randomized Control Trial. PLoS ONE. 2016;11(6):e0156911.
120. Simon JD, Van Loon FR, Van Amstel J, Elmont GS, Zwaan CM, Fiocco M, et al. Pain at home during childhood cancer treatment: Severity, prevalence, analgesic use, and interference with daily life. Pediatric Blood & Cancer. 2020;67(12):e28699..
121. Li KK, Harris K, Hadi S, Chow E. What should be the optimal cut points for mild, moderate, and severe pain? J Palliat Med. 2007;10(6):1338-46.
122. Vetter TR, McGwin G Jr, Bridgewater CL, Madan-Swain A, Ascherman LI. Validation and clinical application of a biopsychosocial model of pain intensity and functional disability in patients with a pediatric chronic pain condition referred to a subspecialty clinic. Pain Res Treat. 2013;2013:143292.
123. Wolters PL, Burns KM, Martin S, Baldwin A, Dombi E, Toledo-Tamula MA, et al. Pain interference in youth with neurofibromatosis type 1 and plexiform neurofibromas and relation to disease severity, social-emotional functioning, and quality of life. American Journal of Medical Genetics Part A. 2015;167(9):2103-13.
124. Charalambous A, Giannakopoulou M, Bozas E. Parallel and serial mediation analysis between pain, anxiety, depression, fatigue and nausea, vomiting and retching within a randomised controlled trial in patients with breast and prostate cancer. BMJ Open 2019;9: e026809.
125. Patton M, Stokoe M, Forbes C, Nwaroh C, Noel M, Reynolds K, Schulte F. The Intergenerational Transmission of Chronic Pain from Parents to Survivors of Childhood Cancer. Children (Basel). 2020;7(11):246.

KEY TO MASTER CHART

EFT	Emotional Freedom Technique
JPMR	Jacobson’s Progressive Muscle Relaxation
MSAS PHY	Physical Symptom Distress
MSAS PSY	Psychological Symptom Distress
GDI	Global Distress Index
MSAS	Average Symptom Distress

S.NO.	MRD NO.	NAME	AGE	SEX	EDUCATION	FAMILY TYPE	BACKGROUND	SOCIO ECONOMIC STATUS	DIAGNOSIS	STAGING
1	941496	A	17	MALE	6th	Nuclear	Rural	Upper Lower	EURINGS	NON METASTATIC
2	944430	P	18	MALE	12th	Nuclear	Rural	Upper Lower	EURINGS	METASTATIC
3	935265	J	14	MALE	10th	Nuclear	Urban	Upper Middle	ALL	HIGH
4	940900	K	14	MALE	10th	Nuclear	Rural	Upper Middle	Osteosarcoma	NON METASTATIC
5	936851	G	17	MALE	12th	Nuclear	Rural	Lower Middle	Osteosarcoma	NON METASTATIC
6	905116	RB	10	MALE	6th	Nuclear	Urban	Lower Middle	ALL	INTERMEDIATE RISK
7	936845	JK	11	FEMALE	7tth	Nuclear	Rural	Lower Middle	CA Nasopharynx	STAGE 3
8	978832	AB	16	MALE	11th	Joint	Rural	Lower Middle	EURINGS	NON METASTATIC
9	883003	E	11	MALE	7th	Joint	Rural	Lower Middle	ALL	INTERMEDIATE
10	932677	B	9	MALE	3rd	Joint	Urban	Upper Middle	ALL	INTERMEDIATE
11	1007801	J	12	FEMALE	6th	Nuclear	Urban	Upper Middle	ALL	INTERMEDIATE
12	646689	R	11	MALE	7tth	Nuclear	Rural	Upper Middle	ALL	HIGH
13	1004057	DS	16	MALE	10th	Nuclear	Rural	Lower Middle	ALL	HIGH
14	1012023	I	11	FEMALE	5th	Nuclear	Urban	Lower Middle	Osteosarcoma	NON METASTATIC
15	968727	S	7	MALE	2nd	Joint	Rural	Lower Middle	ALL	INTERMEDIATE
16	321752	BS	16	MALE	8th	Joint	Urban	Lower Middle	ALL	HIGH
17	945732	H	13	FEMALE	8th	Joint	Rural	Lower Middle	ALL	HIGH
18	930891	R	16	MALE	10th	Nuclear	Rural	Upper Lower	ALCL	STAGE 4
19	947474	S	13	MALE	7th	Joint	Rural	Upper Lower	ALL	HIGH
20	952175	P	10	FEMALE	4th	Nuclear	Urban	Upper Middle	BURKITT LYMPHOMA	STAGE 3
21	907199	K	11	FEMALE	5th	Nuclear	Rural	Upper Lower	T NHL	STAGE 3
22	941380	K	8	MALE	3rd	Nuclear	Urban	Lower Middle	ALL	INTERMEDIATE
23	975455	S	12	FEMALE	6th	Nuclear	Urban	Upper Middle	ALL	INTERMEDIATE
24	980206	GK	10	FEMALE	5th	Joint	Rural	Lower Middle	ALL	INTERMEDIATE
25	690812	P	13	MALE	6th	Joint	Rural	Upper Lower	ALL	HIGH
26	869665	P	8	MALE	3rd	Nuclear	Rural	Upper Lower	AML	INTERMEDIATE
27	934745	J	7	MALE	2nd	Joint	Urban	Upper Middle	EWING SARCOMA	NON METASTATIC
28	999774	DB	11	MALE	5th	Nuclear	Urban	Lower Middle	Osteosarcoma	NON METASTATIC
29	1009172	L	10	FEMALE	9th	Joint	Urban	Lower Middle	ALL	INTERMEDIATE
30	874202	K	15	FEMALE	10th	Nuclear	Rural	Lower Middle	GERM CELL TUMOR	STAGE 3

S.NO.	MRD NO.	PHASE OF TREATMENT	INTERVENTION	Pre Pain severity	Post Pain severity	Pre Pain interference	Post Pain interference
1	941496	Intensive	EFT	7.5	4.2	7.4	3.7
2	944430	Induction	EFT	7	4.2	5.7	3.5
3	935265	Consolidation	EFT	8.2	5	6.5	3.8
4	940900	Intensive	EFT	6	3	7	5
5	936851	Intensive	EFT	6.5	3.7	8.8	6.5
6	905116	Intensive	EFT	7.7	5	5.5	4
7	936845	Intensive	EFT	6.7	4.2	2.1	0.3
8	978832	Intensive	EFT	7.5	5.7	4.5	3.2
9	883003	Maintainance	EFT	7.5	4.7	4.5	3.2
10	932677	Maintainance	EFT	5.2	3	7.7	6.2
11	1007801	Induction	EFT	4	2.5	4.4	2.4
12	646689	Intensive	EFT	4.7	3	4.8	2.8
13	1004057	Induction	EFT	7.7	5.5	7	5
14	1012023	Intensive	EFT	6.7	4	7.2	5.2
15	968727	Maintainance	EFT	5.5	4.5	4.8	4.5
16	321752	Maintainance	JMPR	6.25	5.7	1.5	1.2
17	945732	Induction	JMPR	3.2	2.7	3.14	3
18	930891	Intensive	JMPR	5.7	4.5	7.7	7
19	947474	Consolidation	JMPR	5.5	4.2	4	3.4
20	952175	Induction	JMPR	8	6	2	1.8
21	907199	Maintainance	JMPR	6	5	3.7	3
22	941380	Consolidation	JMPR	8	7	7	6
23	975455	Induction	JMPR	5.2	4.2	5.1	4
24	980206	Induction	JMPR	6	4.2	5.1	4.2
25	690812	Induction	JMPR	8	6.7	5.1	4.4
26	869665	Consolidation	JMPR	2.2	1.5	1.2	1.2
27	934745	Intensive	JMPR	5.5	4.7	3.4	3.1
28	999774	Intensive	JMPR	7.2	6.5	7.2	6.5
29	1009172	Induction	JMPR	5.2	4.5	4.4	4
30	874202	Intensive	JMPR	6.75	4.75	6.28	4.57

S.NO.	MRD NO.	PRE MSAS PHY	POST MSAS PHY	PRE MSAS PSY	POST MSAS PSY	PRE MSAS GDI	POST MSAS GDI	PRE MSAS	POST MSAS
1	941496	3.96	2.96	6.2	2.9	3.8	2	4.2	2.8
2	944430	4.56	2.4	0.9	0.9	2	0.5	2.5	1.53
3	935265	1.88	0.9	1.8	0.7	2.16	1	1.93	1.06
4	940900	4.9	3.18	4.1	1.9	3.41	1.58	3.87	1.65
5	936851	5.16	4.01	6.8	3.6	5.41	3.75	2.59	1.62
6	905116	3.3	1.9	2.7	2.6	2.08	0.83	2.3	1.1
7	936845	7.03	3.48	6.9	3.9	5.5	3.16	4.7	2.6
8	978832	5.66	3.93	2.4	1.8	2.16	1	3.6	2.5
9	883003	6.48	3	5.4	2.3	4.58	2.08	4.87	2.37
10	932677	6.05	4.28	4.3	3.6	4.16	2.58	4.2	2.5
11	1007801	3.78	1.6	7.2	2.9	3.75	1.75	3.34	1.31
12	646689	4.88	1.86	3	1.3	2.66	1.08	2.8	1.1
13	1004057	3.81	1.6	6.5	2.49	3.5	1.25	2.5	1
14	1012023	4.86	1.76	2.6	1.2	3.66	1.5	3	1.4
15	968727	3.8	2.83	4.5	3	3.75	2.33	2.53	1.9
16	321752	3.26	2.48	1.5	1.2	1.75	1.25	2	1.6
17	945732	3.28	2.4	4.9	4.9	3.75	3.35	3.12	2.56
18	930891	3.35	2.71	7.5	6	3.58	2.83	3.28	2.71
19	947474	2.51	2.08	4.3	3.6	3.25	2.05	2	1.7
20	952175	4.08	3.81	2.1	1.5	2.25	2.16	2.8	2.6
21	907199	2.38	1.68	0.9	0.9	1.33	1	2.09	1.43
22	941380	5.13	4.6	3.9	2.8	3.58	3	3.9	3.4
23	975455	3.23	2.75	4.1	3.2	3.58	2.58	2.5	2
24	980206	4.03	3.33	0.9	0.9	1.5	1.6	2.09	1.9
25	690812	5.9	5.5	5.1	5.1	3.75	3.25	3.03	2.93
26	869665	5.4	4.6	3.3	3	2.66	2.5	3.21	2.9
27	934745	4.75	4	0	0	2	1	3.34	1.31
28	999774	3.26	2.91	6	4.9	5	4.41	2.5	2.2
29	1009172	2.83	2.5	1.1	0.9	1.66	1	2.2	1.5
30	874202	3.83	1.6	4.6	2.6	3.98	2.13	3.09	1.62

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The Principal,
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Subject: **Approval of Plan of Thesis.**

This is to inform you that the Faculty of Medical Sciences in its meeting held on 22.01.2021 has approved the plan of thesis of Dr. Sneha Gulati, a student of your college for **M.Phil. (Clinical Psychology)** along with the names of Supervisor/Co-Supervisor as under:-

Topic Plan of Thesis
Comparison of effectiveness of jacobson's progressive muscle relaxation (jpmr) and emotional freedom technique (eft) in pain and symptom distress management among oncology patients

Supervisor
Dr. Bholeshwar Prasad Mishra
Prof. & Head,
Dept. of Clinical Psychology,

Co-Supervisor
Dr. Shruti Kakkar
Asst. Prof.,
Dept. of Paediatrics,
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Ms. Palak Upadhyay
Asst. Prof.,
Dept. of Clinical Psychology,

The student has to submit the three copies of thesis (along with PDF format) , to the Controller of Examinations, BFUHS, Faridkot, at least six months before the commencement of theory examination, if he/she is otherwise eligible to take the examination. He /She must directed to attach a photocopy of this letter with the forwarding letter while submitting thesis to the University along with the letter of approval of University for change of supervisor/Co-Supervisor, change of topic,(if any).

Dr. S P Singh MS(Oph)
Controller of Examinations

Note :

2. *If any discrepancy found regarding topic of thesis or Supervisor/Co-Supervisor, inform undersigned within one month after issue of this letter.*

COMPARISON OF EFFECTIVENESS OF JACOBSON'S PROGRESSIVE MUSCLE RELAXATION (JPMR) AND EMOTIONAL FREEDOM TECHNIQUE (EFT) IN PAIN AND SYMPTOM DISTRESS MANAGEMENT AMONG ONCOLOGY PATIENTS

THESIS PROPOSAL

FOR APPROVAL OF SUBJECT OF THESIS TO BE SUBMITTED

IN PARTIAL FULFILMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

MPHIL.

in

CLINICAL PSYCHOLOGY

OF THE

BABA FARID UNIVERSITY OF HEALTH SCIENCES

FARIDKOT

(JUNE, 2020)

SNEHA GULATI
MPhil. Clinical Psychology Student

Department of CLINICAL PSYCHOLOGY
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ABSTRACT OF PLAN OF THESIS

Title	'COMPARISON OF EFFECTIVENESS OF JACOBSON'S PROGRESSIVE MUSCLE RELAXATION (JPMR) AND EMOTIONAL FREEDOM TECHNIQUE (EFT) IN PAIN AND SYMPTOM DISTRESS MANAGEMENT AMONG ONCOLOGY PATIENTS.'
For the degree of	M.Phil. Clinical Psychology
Name of the candidate	Sneha Gulati
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Co-supervisor	Dr. Shruti Kakkar, Assistant Professor, Department of Paediatrics, DMCH Palak Upadhyay, Assistant Professor, Department of Clinical Psychology, DMCH
Institution	Dayanand Medical College & Hospital, Ludhiana
University	Baba Farid University of Health Sciences, Faridkot

Introduction: Studies have shown that cancer treatments such as chemotherapy can cause side effects like tiredness, nausea and vomiting, loss of hair, skin and nails etc. leading to distress among patients. Pain is also a common accompaniment to childhood cancer. Behavioural interventions including relaxation therapy, hypnosis, cognitive-reappraisal techniques, visual imaging, and self-hypnosis have shown to improve the management of cancer pain and distress. (Ward et al., 2008).

Aim of Study: 1. To study symptom distress and pain experienced by the children undergoing treatment for cancer. 2. To study the effectiveness of psychological interventions, Jacobson's Muscle relaxation technique and Emotional Freedom Technique in management of pain and symptom distress.

Materials & methods: Study will be conducted on IPD AND OPD paediatric oncology patients of 7 to 18 years from August to January 2020 at Paediatric oncology unit of department of Paediatrics, DMCH, Ludhiana. Evaluation will be done using Brief Pain Inventory (Short Form) and The Memorial Symptom Assessment Scale – Short Form.

Clinical Significance: Effectiveness of psychological interventions in helping with pain and symptom distress management.

Keywords: Emotional Freedom Technique, Jacobson's Muscle relaxation technique, distress, pain, paediatric oncology.

(Signature)	(Signature)	(Signature)	(Signature)
Candidate	Co-supervisor	Supervisor	Principal

CERTIFICATE OF FACILITIES AVAILABLE

This is to certify that the facilities for work on the subject of thesis **COMPARISON OF EFFECTIVENESS OF JACOBSON'S PROGRESSIVE MUSCLE RELAXATION (JPMR) AND EMOTIONAL FREEDOM TECHNIQUE (EFT) IN PAIN AND SYMPTOM DISTRESS MANAGEMENT AMONG ONCOLOGY PATIENTS.'.** Exist in the Department of Paedaitrics, Dayanand Medical College & Hospital, Ludhiana and will be provided to the candidate. We will see that the data being included in the thesis are genuine and is collected by the candidate himself/herself under our supervision and guidance.

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APPROVAL PROFORMA
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	Dr. Gagandeep Singh (Secretary, Ethics Committee Professor & Head, Neurology)

Approved: Yes / No

Chairperson
Research Committee

Approved : Yes / ~~No~~

Chairperson
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PROFORMA FOR REGISTRATION OF SUBJECT FOR DISSERTATION

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4	DATE OF ADMISSION OF COURSE	23.08.2019
5	TITLE OF THE TOPIC	COMPARISON OF EFFECTIVENESS OF JACOBSON'S PROGRESSIVE MUSCLE RELAXATION (JPMR) AND EMOTIONAL FREEDOM TECHNIQUE (EFT) IN PAIN AND SYMPTOM DISTRESS MANAGEMENT AMONG ONCOLOGY PATIENTS

6. BRIEF RESUME OF THE INTENDED WORK

6.1 NEED FOR THE STUDY

Cancer is a set of more than 100 diseases that have several factors in common. All cancers result from a dysfunction in DNA—that part of the cellular programming that controls cell growth and reproduction. Instead of ensuring the regular, slow production of new cells, this malfunctioning DNA causes excessively rapid cell growth and proliferation. Unlike other cells, cancerous cells provide no benefit to the body. They merely sap it of resources. (Holland, 2002).[1]

Children with cancer may undergo surgery for diagnostic purposes (e.g., tumour biopsy) or for treatment (i.e., tumour excision). Hospitalized children typically experience a multitude of acute pain stressors, in addition to surgery-related pain. Children who are hospitalized for nonsurgical reasons may have disease-related pain which is also insufficiently managed. These children may have to undergo other painful perturbations in the course of their diagnostic evaluation and/or medical treatment. The child whose current level of pain has not been adequately addressed may have reduced tolerance to cope with new perturbations and thus respond with what may seem like inappropriately severe distress and lack of self-control).[2]

Anticipatory fear with expectations of pain can then contribute to the overall aversiveness of the pain experience. A cascade of different manifestations of stress can ensue, including behavioural withdrawal or irritability, difficulty sleeping, and physiological signs of arousal such as elevated adrenal cortical and medullary stress hormones and metabolic sequelae based on the actions of these hormones (Anand, Carr, & Hickey, 1987)

Although pain killers remain the primary method of treating cancer-related pain, behavioural interventions including relaxation therapy, hypnosis, cognitive-reappraisal techniques, visual imaging, and self-hypnosis also improve the management of cancer pain (Turk & Fernandez, 1990; Ward et al., 2008). Interventions involving expressive disclosure or writing about benefits derived from cancer have been tied

to fewer symptoms and fewer medical appointments for cancer-related problems (Low et al., 2006). The opportunity to affirm important personal values and the use of emotional approach coping appear to account for these benefits (Creswell, Lam, et al., 2007).

The backbone of most cancer treatment programs is chemotherapy, because medication given systemically can fight the cancer at the site of its origin and throughout the body. Most chemotherapeutic agents work by preventing division or growth of rapidly growing cells. Some chemotherapy is given by vein, some by mouth, or some by injection into a muscle or directly into the spinal fluid.

The children's major landmarks (their body, their place in their family and in society, a sense of identity and of having a value, the meaning and value of their life) are more or less disturbed during the experience of cancer. Acute medical procedure pain and distress for children with cancer can be so extreme that some children refuse further therapy due to the fear associated with the treatment, thus compromising their survival (Dolgin, Katz, Doctors, & Siegel, 1986)

Psychosocial interventions in pain and distress management among cancer patients includes a wide array of focus areas such as on health behaviours, exercise, mindfulness, behavioural interventions, cognitive behavioural therapy and hypnosis.

The present study is in relation to the pain and symptom distress management in paediatric oncology patients, which can be secondary to the underlying tumour, due to treatment-related effects of chemotherapy, radiation therapy, or procedure-related along with fear of side effects of chemotherapy.

INTERVENTIONS USED IN THE STUDY

Jacobson's relaxation technique is a type of therapy that focuses on tightening and relaxing specific muscle groups in sequence. It's also known as progressive relaxation therapy. By concentrating on specific areas and tensing and then relaxing them, you can become more aware of your body and physical sensations.

Relaxation techniques can help to decrease stimuli contributing to symptoms. Progressive muscle relaxation technique significantly

reduces chemotherapy induced nausea and vomiting. Techniques involving relaxation are widely used by people to reduce anxiety and cope with stress-related problems. Relaxation therapy is initiated and taught to peoples but is practiced primarily in the client's own environment. As progressive muscle relaxation is found effective, safe, non- pharmacological, non- invasive, cost effective method in conditions like anxiety, depression, stress and pain.[7]

EFT (Emotional Freedom Technique) was developed from DR. Roger Callahan's TFT (Thought Field Therapy) by Gary Craig, who simplified and popularized EFT as a 'Do-it-yourself' method. EFT works on the understanding that emotional trauma contributes greatly to disease.

EFT is a brief intervention combining elements of exposure, cognitive therapy, and somatic stimulation of acupressure points on the face and body. Participants typically identify a concern or issue they wish to address with the technique and rate their level of distress on a Likert-type scale out of 10 (10 is the maximum amount of distress and 0 represents the minimum or a neutral state). This is called a Subjective Unit of Distress (SUDS) scale and has long been used as a subjective measure of a participant's discomfort in therapy. Participants then state their concern in a "Setup Statement," which assists in turning them into their level of distress. This is typically stated in this format "Even though I have this problem (e.g. anger), I deeply and completely accept myself." The first half of the setup statement emphasizes exposure, while the second half frames the traumatizing event in the context of self-acceptance. The participant then engages in the somatic tapping process on acupoints on the body while they repeat a shortened phrase to stay engaged (e.g. feel angry). This is called the "Reminder Phrase." The tapping sequence uses 8 acupoints on the face and upper body and is normally repeated until the SUDS rating is very low (1 or 0).

A current research bibliography lists more than 100 studies published in peer-reviewed journals (Research.EFTuniverse.com). Its efficacy extends across a wide sample of populations, including college students, veterans, pain patients, overweight individuals, hospital

patients, athletes, health care workers, gifted students, chemotherapy patients, and phobia sufferers.

When measured against the standards of the American Psychological Association's Division 12 Task Force on Empirically Validated Treatments, EFT is found to be an "evidence-based" practice for anxiety, depression, phobias, and posttraumatic stress disorder (PTSD).

6.2 REVIEW OF LITERATURE

A meta-analysis of randomised controlled trials employing relaxation-based interventions and found considerable efficacy for the technique. Their analysis yielded effect sizes of 0.45–0.55 for the effect of relaxation methods on treatment related symptoms such as pain nausea, and also blood pressure and pulse rate. (Luebbert *et al*, 2001). Progressive muscle relaxation has also been used with success for relief of tension headaches (Janssen,1983).

Turk and Rennert (1981) encouraged patients with cancer to describe and monitor their pain, encouraged them to develop coping skills, taught them relaxation skills, encouraged them to do positive imagery and to focus on other things. They reported that these techniques were successful in reducing the pain experience.

Thomas in 1981 did a study on Effectiveness of relaxation training in reducing adverse reactions to cancer chemotherapy indicated that patients in the relaxation training condition reported feeling less emotionally distressed and nauseated, and showed less physiological arousal following the chemotherapy infusion, than patients in the no relaxation training condition.[8]

Relaxation and cognitive-behavioural therapy produced significant improvement in several problematic areas for chronic back pain patients. (Turner, 1982).

Jennifer in 1993 did a study on cognitive distraction and relaxation training for the control of side effects due to cancer chemotherapy indicated that Relaxation training patients reported less nausea prior to chemotherapy and exhibited lower systolic and diastolic blood pressures after chemotherapy than control patients.[9]

Relaxation training has also been found to lead to higher lymphocyte counts and higher whit1e blood cell numbers even in cancer patients receiving myelosuppressive therapy (Lekander, Furst, Rotstein, Hursti, & Fredrikson, 1997).

Yoo HJ et al (2005) conducted a study to assess the effectiveness of progressive muscle relaxation training (PMRT) and guided imagery

(GI) in reducing the anticipatory nausea and vomiting (ANV) and post-chemotherapy nausea and vomiting (PNV) of patients with breast cancer and to measure their effects on the patients' quality of life (QoL). Thirty breast cancer patients on chemotherapy were randomized to the PMRT and GI group and 30 to the control group. Before each of six cycles of adjuvant chemotherapy, each patient was administered a self-report Multiple Affect Adjective Checklist (MAACL), and incidents of ANV and PNV for the first three post chemotherapy days were recorded. All patients were administered the Functional Assessment of Cancer Therapy-Breast (FACT-B) at baseline and after 3 and 6 months. They found that the PMRT and GI group was significantly less anxious, depressive, and hostile than the control.

Carvahlo CD (2007) conducted a similar study in cancer patients receiving chemotherapy at saopaoul, Brazil. For nausea and vomiting, the Wilcoxon test indicated that changes were statically significant (Z= 4.729, p=0, and Z= 4.739, p=0 respectively). The results showed a reduction in the intensity of nausea and vomiting after progressive muscle relaxation, suggesting that relaxation can contribute to the control of nausea and vomiting in these patients.

Donna's Systematic reviews and meta-analyses have demonstrated Emotional Freedom Technique (EFT) efficacy for both physiological and psychological symptoms.[10]

Donna Batch et al. studied Clinical EFT (Emotional Freedom Techniques). The results showed Improved Multiple Physiological Markers of Health, study showed that participants experienced significant decreases in pain, anxiety, depression, and PTSD. Physiological indicators of health such as RHR, BP, and cortisol also significantly decreased, indicating improvement. Happiness levels increased as did immune system function.[10]

Ortner in 2014 studied the Effects of Emotional Freedom Techniques (EFT) on the reduction of chronic pain in adults, Significant reductions were found on each of the PCS item scores (rumination, magnification, and helplessness) and on the PCS total score (-43%, $p < .001$). On the MPI, significant improvements were observed in pain severity,

interference, life control, affective distress, and dysfunctional composite. At 6-month follow-up, reductions were maintained on the PCS (-42%, $p < .001$) but only on the life control item for the MPI. Findings suggest that EFT helps immediately reduce pain severity while also improving participants' ability to live with their pain.[11]

Hakam in 2009 did Spiritual Emotional Freedom Technique intervention to reduce pain in cancer patients and the study showed that combination SEFT intervention and analgesic therapy was more effective than only analgesic therapy. SEFT can be employed for cancer patients to relieve their pain.[12]

Kalla in 2017 used Emotional freedom techniques (EFT) as a practice for supporting chronic disease healthcare and concluded that EFT offers potential as a technique that may be used by health practitioners to support the psychosocial aspect of chronic disease healthcare.[13]

Kemper and Wornham (2001) prospectively studied 70 paediatric patients (43 of them oncology patients) who were referred for complementary and alternative medicine use consultation as part of their treatment at an urban tertiary care teaching hospital in Boston, Massachusetts. The most frequent goals for complementary and alternative medicine use therapy were treatment of pain, nausea, insomnia, or agitation, and the most common complementary and alternative medicine use modalities employed included herbs, dietary supplements, diet and nutrition, biofeedback and massage. Several families also engaged in prayer or Reiki and other energy healing techniques or were interested in learning more about these.[14]

The effect of a brief EFT (Emotional Freedom Techniques) self-intervention on anxiety, depression, pain and cravings in healthcare workers reflected that EFT provided an immediate effect on psychological distress, pain, and cravings that was replicated across multiple conferences and healthcare provider samples. (Church, D., & Brooks, A. J., 2010).

EFT (Emotional Freedom Technique) in Cancer Treatment & Cancer Pain Management: A case study by Gary Craig (2006) depicted that

EFT affected seven cancer patients both with respect to their experienced pain as well as the cancerous process itself.

Study with 25 paediatric oncology patients, found that 21 agreed to use the exercises of guided imagery and 19 showed substantial reductions in pain and nausea associated with their practice, especially if they begin the exercises at the time of their initial diagnosis (Olness1981).

6.3 AIMS AND OBJECTIVES OF THE STUDY

Objectives:

1. To study the symptom distress and pain experienced by the children undergoing treatment for cancer.
2. To study the effectiveness of psychological interventions, Jacobson's Muscle relaxation technique and Emotional Freedom Technique in management of pain and symptom distress.

7.1 MATERIALS AND METHODS

Source of Data

Study will be conducted on outpatients and inpatients in paediatric oncology unit at Dayanand Medical College and Hospital.

7.2 METHOD OF COLLECTION OF DATA

SAMPLE COLLECTION

Study will include IPD AND OPD paediatric oncology patients of 7 to 18 years, undergoing cancer treatment except for oral chemotherapy drugs from August to January 2020 at Paediatric oncology unit of department of Paediatrics, DMCH, Ludhiana.

INCLUSION CRITERIA

1. Patients between 7 to 18 years of age undergoing chemotherapy.
2. Outpatients and inpatients in Paediatric oncology unit at Dayanand Medical College and Hospital.

EXCLUSION CRITERIA

1. Patients with any major psychotic illness screened with history taking and interview.
2. Patients whose consent is not received.
3. Patients only on oral chemotherapy drugs. (Example CML) will be excluded.

METHODOLOGY

The study will be conducted on outpatients and inpatients of 7 to 18 years, undergoing cancer treatment except for oral chemotherapy drugs from August to January 2020 at paediatric oncology unit at Dayanand Medical College and Hospital. Sociodemographic Performa will be filled containing the basic information about the patient along with diagnosis, staging, and phase of treatment. The subjects will be evaluated by using Brief Pain Inventory and The Memorial Symptom Assessment Scale – Short Form. Before the application of any test or intervention, informed consent from parents or caregivers of patients below 18 years of age, written assent from patients above 12 years of age and oral assent from patients between 7 to 11 years will be

obtained. Subjects will be instructed beforehand regarding the assessment tools.

TOOLS

1. SOCIO – DEMOGRAPHIC PERFROMA
2. THE BRIEF PAIN INVENTORY (SHORT FORM)
3. THE MEMORIAL SYMPTOM ASSESSMENT SCALE – (7-12 years)
4. THE MEMORIAL SYMPTOM ASSESSMENT SCALE – (10-18 years)

1. The Brief Pain Inventory (BPI) short form was developed by Cleeland in 1984. It is a short, self-administered questionnaire which is designed in order to assess the severity and impact of pain, mainly of cancer origin. It is a 9-item self-administered questionnaire used to evaluate the severity of a patient's pain and the impact of this pain on the patient's daily functioning. The patient is asked to rate their worst, least, average, and current pain intensity, list current treatments and their perceived effectiveness, and rate the degree that pain interferes with general activity, mood, walking ability, normal work, relations with other persons, sleep, and enjoyment of life on a 10 point scale.

Scoring: Pain Severity Score = Mean of items 3-6 (pain at its worst, pain at its least, average Pain Interference Score = Mean of items 9A-9G (interference of pain with: general activity, mood, walking, normal work, relations, sleep, enjoyment of life).

2. The Memorial Symptom Assessment Scale (MSAS) is a 32 item inventory rated on a 5 point Likert-type scale. Its purpose is to measure the frequency, severity, and distress associated with; 32 separate, multidimensional symptoms experienced by patients.

Scoring:

The scoring of the MSAS yields several validated subscale scores.

A 10 item MSAS Global Distress Index (MSAS-GDI) is considered to be a measure of overall symptom distress. The GDI is the average of the frequency of 4 prevalent psychological symptoms (feeling sad, worrying, feeling irritable, and feeling nervous) and the distress associated with 6 prevalent physical symptoms (lack of appetite, lack of energy, pain, feeling drowsy, constipation, dry mouth).

The Physical Symptom Subscale score (MSAS-PHYS) is the average of the frequency, severity and distress associated with 12 prevalent physical symptoms: lack of appetite, lack of energy, pain, feeling drowsy, constipation, dry mouth, nausea, vomiting, change in taste, weight loss, feeling bloated, and dizziness. The **Psychological Symptom Subscale score (MSAS-PSYCH)** is the average of the frequency, severity and distress associated with 6 prevalent psychological symptoms: worrying, feeling sad, feeling nervous, difficulty sleeping, feeling irritable, and difficulty concentrating.

The Total MSAS score (TMSAS) is the average of the symptom scores of all 32 symptoms in the MSAS instrument. Each symptom score is an average of its dimensions.

OUTCOME

In the study it will be observed that cancer patients experience pain and symptom distress. The present study will draw attention to the fact that use of psychological interventions might help in pain management and reduction of symptom distress leading to better compliance to medical treatments.

STATISTICAL ANALYSIS

Data will be described in terms of range; mean ±standard deviation (± SD), median, frequencies (number of cases) and relative frequencies (percentages) as appropriate. Comparison of quantitative variables between the groups will be done using Student t-test and Mann Whitney U test for independent samples for parametric and non-parametric data respectively. Comparison of quantitative variables within the groups will be done using paired t-test. For comparing categorical data, Chi square ($\chi 2$) test will be performed and exact test will be used when the expected frequency is less than 5. A probability value (p value) less than 0.05 will be considered statistically significant. All statistical calculations will be done using SPSS (Statistical Package for the Social Science) SPSS 21 version statistical program for Microsoft Windows.

7.3 DOES THE STUDY REQUIRE ANY INVESTIGATIONS OR INTERVENTIONS TO BE CONDUCTED ON PATIENTS OR OTHER HUMANS OR ANIMALS? IF SO, PLEASE DESCRIBE BRIEFLY.

NO

7.4 HAS ETHICAL CLEARENCE BEEN OBTAINED FROM YOUR INSTITUTION IN CASE OF 7.3?

Yes Attached herewith

REFERENCES

1. American Cancer Society. (2000). Cancer facts and figures. American Cancer Society.
2. Holland, J. C. (1990). Historical overview. In J. C. Holland & J. H. Rowland (Eds.), Handbook of psychooncology (pp. 3...12). New York, Oxford University Press.

   Hain, Richard, Pain in Pediatric Oncology, 2012, Journal of Pediatric Psycho-Oncology: Psychosocial Aspects and Clinical Interventions: Second Edition
3. Classen C, Sephton SE, Diamond S, Spiegel D. Studies of life-extending psychosocial interventions. In J. C. Holland (Ed.), Psycho-oncology. New York: Oxford University Press. 1998. P. 730-42.
4. Granowetter, L. Pediatric oncology: A medical overview. In D. J. Bearison & R. K. Mulhern (Eds.), Pediatric psychooncology: Psychological perspectives on children with cancer. Oxford University Press; 1994. p. 9-34.
5. Shulamith Kreitler and Myriam Weyl Ben Arush (2004). Psychosocial aspects of pediatric oncology. John Wiley & Sons Ltd., New York.
6. Kreitler S, Krivoy E, Toren A. Psychosocial aspects of radiotherapy in pediatric cancer patients. In: Kreitler S, Ben-Arush MW, Martin A (Eds.), Pediatric psycho-oncology: Psychosocial aspects and clinical interventions. Wiley-Blackwell. 2012. p. 62-70
7. Redd, W.H., & Jacobson, P.B. (2001). Behavioural intervention in comprehensive cancer care. In A.S. Baum, T.A Ravenson & J.E. Singer (Eds.), Handbook of Health Psychology (PP.757-776). Mahwah, NJ: Lawrence Erlbaum Associates.
8. Burish TC, Carey MP, Wallston KA, STEIN MJ, Jamison RN, LYLES JN. Health locus of control and chronic disease: An external orientation may be advantageous. Journal of Behavioral Medicine. 1981;4:65–78.

9. Vasterling J, Jenkins RA, Tope DM, Thomas G. Cognitive distraction and relaxation training for the control of side effects due to cancer chemotherapy. Journal of Behavioral Medicine. 1993;16:65–80.
10. Donna Bach, ND, Gary Groesbeck, BCIA, Peta Stapleton, PhD, Rebecca Sims, MCP, Katharina Blickheuser, PhD, and Dawson Church, PhD, (2019). J Evid Based Integr Med. v.24.
11. Ortner N, Palmer-Hoffman J, Clond MA. Effects of Emotional Freedom Techniques (EFT) on the reduction of chronic pain in adults: A pilot study. Energy Psychology: Theory, Research, and Treatment. 2014;6:14–2.
12. Hakam, M., Yetti, K., & Hariyati, T. S. (2009). Spiritual emotional freedom technique intervention to reduce pain in cancer patients. *Makara Journal of Health Research, 13*(2).
13. Kalla M, Simmons M, Robinson A, Stapleton P. Emotional freedom techniques (EFT) as a practice for supporting chronic disease healthcare: A practitioners' perspective. Disability and Rehabilitation. 2017;1–9.
14. Kemper KJ, Wornham WL. Consultations for holistic pediatric services for inpatients and outpatient oncology patients at a children's hospital. Arch. Pediatric. Adolescents. Med. 2001;155:449–54.
15. Lyles JN, Burish TJ, Krozely MG, Oldham RK. Efficacy of relaxation training and guided imagery in reducing the aversiveness of cancer chemotherapy. Journal of Consultingand Clinical Psychology. 1982;50:509-24.
16. Meyer TJ, Mark MM. Effects of psychosocial interventions with adult cancer patients: A meta-analysis of randomized experiments. Health Psychology. 1995;14:101-8
17. Cleeland CS, Ryan KM. Pain assessment: Global use of the Brief Pain Inventory. Annals, Academy of Medicine, Singapore. 1994;23:129–38.
18. Lam, Wendy, Law, Chi, Fu, Yiu, Wong, Kam, Chang, Victor, Fielding, Richard, New insights in symptom assessment: the

Chinese versions of the Memorial Symptom Assessment,
Journal of pain and symptom management, 2008

SOCIO-DEMOGRAPHIC PROFORMA

S.NO:-

Date:

1. NAME:

2. AGE:

3. SEX:- Male/ Female

4. MRD.NO:-

5. Education-

a) Illiterate
b) Up to Matric
c) 10th
d) 12th
e) Graduate
f) Post graduate

6. Occupation-

a) Farmer/Clerical/Shopkeeper
b) Semi-skilled/skilled worker
c) Unemployed
d) Other
e) Professional
f) Student

7. Address- a) Urban b) Rural

8. Contact no.-

9. Family Type- a) Nuclear b) Joint

10. Education of the Head of family

A) Professional degree
B) Graduate or post graduate
C) Intermediate or post high school diploma
D) High school certificate
E) Middle school certificate
F) Primary school certificate
G) Illiterate

11. Occupation of the head of family

A) Professional
B) Semi- professional
C) Clerical, shop owner/farm
D) Semi skilled worker
E) Unskilled worker
F) Unemployed

12. Monthly income of the family

SIGNATURE OF SUPERVISOR

SIGNATURE OF CANDIDATE

A) >52,734
B) 26,335-52,733
C) 19,759-26,354
D) 13,161- 19,758
E) 7,887-13,160
F) 2,641-7,886
G) <2,640

13. Socio economic status
A) Upper
B) Upper middle
C) Lower middle
D) Upper lower
E) Lower

14. Diagnosis:

15. Staging:

16. Phase of Treatment:

17. SCALES:

1. Brief Pain Inventory

Pain Severity Score =

Pain Interference Score =

2. The Memorial Symptom Assessment Scale (MSAS)

Global Distress Index (MSAS-GDI) =

Physical Symptom Subscale (MSAS-PHYS) =

Psychological Symptom Subscale (MSAS-PSYCH) =

Total MSAS score (TMSAS) =

18. Intervention: JPMR / EFT

CONTACT NO.

SIGNATURE OF SUPERVISOR **SIGNATURE OF CANDIDATE**

1903

Date: ☐☐ / ☐☐ / ☐☐
(month) (day) (year)

Subject's Initials : _____

Study Subject #: ☐☐☐☐

Study Name: _____

_____

Protocol #: _____

PI: _____

Revision: 07/01/05

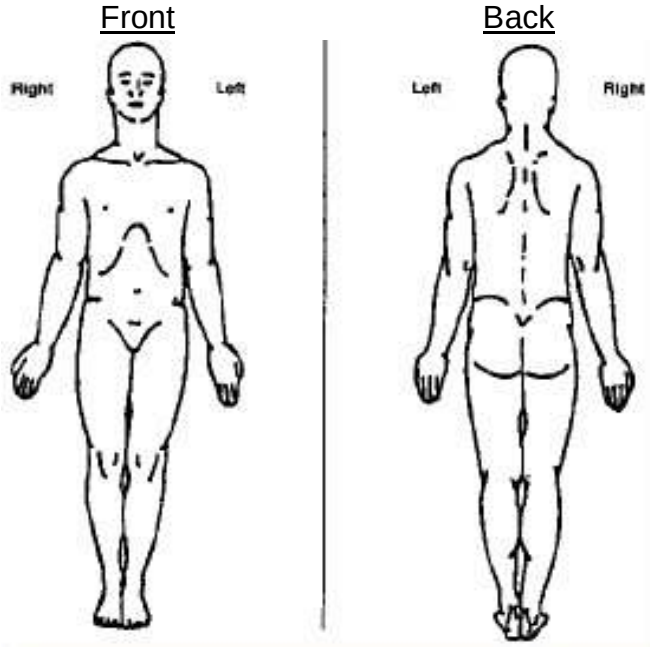
PLEASE USE BLACK INK PEN

Brief Pain Inventory (Short Form)

1. Throughout our lives, most of us have had pain from time to time (such as minor headaches, sprains, and toothaches). Have you had pain other than these everyday kinds of pain today?

☐ Yes ☐ No

2. On the diagram, shade in the areas where you feel pain. Put an X on the area that hurts the most.



3. Please rate your pain by marking the box beside the number that best describes your pain at its worst in the last 24 hours.

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

No Pain — Pain As Bad As You Can Imagine

4. Please rate your pain by marking the box beside the number that best describes your pain at its least in the last 24 hours.

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

No Pain — Pain As Bad As You Can Imagine

5. Please rate your pain by marking the box beside the number that best describes your pain on the average.

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

No Pain — Pain As Bad As You Can Imagine

6. Please rate your pain by marking the box beside the number that tells how much pain you have right now.

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

No Pain — Pain As Bad As You Can Imagine

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Pain Research Group
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1903

Date: ☐☐ / ☐☐ / ☐☐
(month) (day) (year)

Subject's Initials : _____

Study Subject #: ☐☐☐☐

Study Name: _____

Protocol #: _____

PI: _____

Revision: 07/01/05

PLEASE USE BLACK INK PEN

7. What treatments or medications are you receiving for your pain?

8. In the last 24 hours, how much relief have pain treatments or medications provided? Please mark the box below the percentage that most shows how much relief you have received.

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
☐ No Relief	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐ Complete Relief

9. Mark the box beside the number that describes how, during the past 24 hours, pain has interfered with your:

A. General Activity

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

Does Not Interfere — Completely Interferes

B. Mood

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

Does Not Interfere — Completely Interferes

C. Walking ability

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

Does Not Interfere — Completely Interferes

D. Normal Work (includes both work outside the home and housework)

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

Does Not Interfere — Completely Interferes

E. Relations with other people

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

Does Not Interfere — Completely Interferes

F. Sleep

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

Does Not Interfere — Completely Interferes

G. Enjoyment of life

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

Does Not Interfere — Completely Interferes

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Module 7
Figure 4: MEMORIAL SYMPTOM ASSESSMENT SCALE (10-18)

MEMORIAL SYMPTOM ASSESSMENT SCALE (10-18) - REVISED

NAME: **DATE:**

SECTION 1:

INSTRUCTIONS: We have listed 23 symptoms below. Read each one carefully. If you have had the symptom during this past week, circle **YES**. If **YES**, let us know how **OFTEN** you had it, how **SEVERE** it was usually and how much it **BOTHERED OR DISTRESSED** by circling the appropriate answer. If you **DID NOT HAVE** the symptom circle **NO**.

DURING THE PAST WEEK DID YOU HAVE ANY:

***DIFFICULTY CONCENTRATING or PAYING ATTENTION?**

1. YES or 2. NO

If YES: **How often did you have it?**
1 - Almost never 2 - Sometimes 3 - A lot 4 - Almost always
How severe was it usually?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
How much did it bother or distress you?
0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

***PAIN?**

1. YES or 2. NO

If YES: **How often did you have it?**
1 - Almost never 2 - Sometimes 3 - A lot 4 - Almost always
How severe was it usually?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
How much did it bother or distress you?
0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

***LACK OF ENERGY?**

1. YES or 2. NO

If YES: **How often did you have it?**
1 - Almost never 2 - Sometimes 3 - A lot 4 - Almost always
How severe was it usually?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
How much did it bother or distress you?
0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

***COUGH?**

1. YES or 2. NO

If YES: **How often did you have it?**
1 - Almost never 2 - Sometimes 3 - A lot 4 - Almost always
How severe was it usually?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
How much did it bother or distress you?
0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

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Figure 4 *(Continued):* MSAS 10-18 (REVISED)

DURING THE PAST WEEK DID YOU HAVE ANY:

***FEELING OF BEING NERVOUS?**
1. YES or 2. NO

If YES: **How often did you have it?**
1 - Almost never 2 - Sometimes 3 - A lot 4 - Almost always
How severe was it usually?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
How much did it bother or distress you?
0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

***DRY MOUTH?**
1. YES or 2. NO

If YES: **How often did you have it?**
1 - Almost never 2 - Sometimes 3 - A lot 4 - Almost always
How severe was it usually?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
How much did it bother or distress you?
0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

***NAUSEA or FEELING LIKE YOU COULD VOMIT?**
1. YES or 2. NO

If YES: **How often did you have it?**
1 - Almost never 2 - Sometimes 3 - A lot 4 - Almost always
How severe was it usually?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
How much did it bother or distress you?
0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

*** A FEELING OF BEING DROWSY?**
1. YES or 2. NO

If YES: **How often did you have it?**
1 - Almost never 2 - Sometimes 3 - A lot 4 - Almost always
How severe was it usually?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
How much did it bother or distress you?
0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

***NUMBNESS/TINGLING or PINS AND NEEDLES FEELING IN HANDS or FEET?**
1. YES or 2. No

If YES: **How often did you have it?**
1 - Almost never 2 - Sometimes 3 - A lot 4 - Almost always
How severe was it usually?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
How much did it bother or distress you?
0 - Not at all - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

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Figure 4 *(Continued):* MSAS 10-18 (REVISED)

DURING THE PAST WEEK DID YOU HAVE ANY:

***DIFFICULTY SLEEPING?**
1. YES or 2. NO

If YES: **How often did you have it?**
1 - Almost never 2 - Sometimes 3 - A lot 4 - Almost always
How severe was it usually?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
How much did it bother or distress you?
0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

***PROBLEMS WITH URINATION or 'PEEING'?**
1. YES or 2. NO

If YES: **How often did you have it?**
1 - Almost never 2 - Sometimes 3 - A lot 4 - Almost always
How severe was it usually?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
How much did it bother or distress you?
0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

***VOMITING or THROWING UP?**
1. YES or 2. NO

If YES: **How often did you have it?**
1 - Almost never 2 - Sometimes 3 - A lot 4 - Almost always
How severe was it usually?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
How much did it bother or distress you?
0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

***SHORTNESS OF BREATH?**
1. YES or 2. NO

If YES: **How often did you have it?**
1 - Almost never 2 - Sometimes 3 - A lot 4 - Almost always
How severe was it usually?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
How much did it bother or distress you?
0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

***DIARRHEA or LOOSE BOWEL MOVEMENT?**
1. YES or 2. NO

If YES: **How often did you have it?**
1 - Almost never 2 - Sometimes 3 - A lot 4 - Almost always
How severe was it usually?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
How much did it bother or distress you?
0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

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Figure 4 *(Continued):* MSAS 10-18 (REVISED)

DURING THE PAST WEEK DID YOU HAVE ANY:

***FEELINGS OF SADNESS?**
1. YES or 2. NO

If YES: **How often did you have it?**
1 - Almost never 2 - Sometimes 3 - A lot 4 - Almost always
How severe was it usually?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
How much did it bother or distress you?
0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

***SWEATS?**
1. YES or 2. NO

If YES: **How often did you have it?**
1 - Almost never 2 - Sometimes 3 - A lot 4 - Almost always
How severe was it usually?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
How much did it bother or distress you?
0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

***WORRYING?**
1. YES or 2. NO

If Yes: **How often did you have it?**
1 - Almost never 2 - Sometimes 3 - A lot 4 - Almost always
How severe was it usually?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
How much did it bother or distress you?
0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

***ITCHING?**
1. YES or 2. NO

If YES: **How often did you have it?**
1 - Almost never 2 - Sometimes 3 - A lot 4 - Almost always
How severe was it usually?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
How much did it bother or distress you?
0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

***LACK OF APPETITE OR NOT WANTING TO EAT?**
1. YES or 2. NO

If YES: **How often did you have it?**
1 - Almost never 2 - Sometimes 3 - A lot 4 - Almost always
How severe was it usually?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
How much did it bother or distress you?
0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

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Figure 4 *(Continued):* MSAS 10-18 (REVISED)

DURING THE PAST WEEK DID YOU HAVE ANY:

***<u>DIZZINESS</u>?**
1. YES or 2. NO

If YES: **<u>How often did you have it</u>?**
1 - Almost never 2 - Sometimes 3 - A lot 4 - Almost always
<u>How severe was it usually</u>?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
<u>How much did it bother or distress you</u>?
0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

***<u>DIFFICULTY SWALLOWING</u>?**
1. YES or 2. NO

If YES: **<u>How often did you have it</u>?**
1 - Almost never 2 - Sometimes 3 - A lot 4 - Almost always
<u>How severe was it usually</u>?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
<u>How much did it bother or distress you</u>?
0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

***<u>FEELINGS OF BEING IRRITABLE</u>?**
1. YES or 2. NO

If YES: **<u>How often did you have it</u>?**
1 - Almost never 2 - Sometimes 3 - A lot 4 - Almost always
<u>How severe was it usually</u>?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
<u>How much did it bother or distress you</u>?
0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

***<u>HEADACHE</u>?**
1. YES or 2. NO

If YES: **<u>How often did you have it</u>?**
1 - Almost never 2 - Sometimes 3 - A lot 4 - Almost always
<u>How severe was it usually</u>?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
<u>How much did it bother or distress you</u>?
0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

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Figure 4 *(Continued):* MSAS 10-18 (REVISED)

SECTION 2:

INSTRUCTIONS: We have listed 8 symptoms below. Read each one carefully. If you have had the symptom during this past week, let us know how SEVERE it was usually and how much it BOTHERED OR DISTRESSED by circling the appropriate answer. If you DID NOT HAVE the symptom circle NO.

DURING THE LAST WEEK DID YOU HAVE ANY:

***MOUTH SORES?**
1. YES or 2. NO

If YES: How severe was it usually?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
How much did it bother or distress you?
0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

***CHANGE IN THE WAY FOOD TASTES?**
1. YES or 2. NO

If YES: How severe was it usually?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
How much did it bother or distress you?
0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

***WEIGHT LOSS?**
1. YES or 2. NO

If YES: How severe was it usually?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
How much did it bother or distress you?
0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

***LESS HAIR THAN USUAL?**
1. YES or 2. NO

If YES: How severe was it usually?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
How much did it bother or distress you?
0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

***CONSTIPATION or UNCOMFORTABLE BECAUSE BOWEL MOVEMENTS ARE LESS OFTEN?**
1. YES or 2. NO

If YES: How severe was it usually?
1 - Slight 2 - Moderately 3 - Severe 4 - Very severe
How much did it bother or distress you?
0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

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Figure 4 *(Continued):* MSAS 10-18 (REVISED)

DURING THE PAST WEEK DID YOU HAVE ANY:

***SWELLING OF ARMS or LEGS?**

1. YES or 2. NO

If YES: How severe was it usually?

1 - Slight 2 - Moderately 3 - Severe 4 - Very severe

How much did it bother or distress you?

0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

***"I DON'T LOOK LIKE MYSELF"**

1. YES or 2. NO

If YES: How severe was it usually?

1 - Slight 2 - Moderately 3 - Severe 4 - Very severe

How much did it bother or distress you?

0 - Not at all 1 - A little bit 2- Somewhat 3 - Quite a bit 4 - Very much

***CHANGES IN SKIN?**

1. YES or 2. NO

If YES: How severe was it usually?

1 - Slight 2 - Moderately 3 - Severe 4 - Very severe

How much did it bother or distress you?

0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

.

**IF YOU HAD OTHER SYMPTOMS DURING THE PAST WEEK, PLEASE LIST THEM BELOW AND INDICATE HOW MUCH THE SYMPTOM DISTRESSED OR BOTHERED YOU.

Other Symptom: _____

How much did it bother or distress you?

0 - Not at all 1 - A little bit 2 - Somewhat 3 - Quite a bit 4 - Very much

---

Source:

Collins, J.J., Byrnes, M.E., Dunkel, I.J., Lapin, J., Nadel, T., Thaler, H.T., Polyak, T., Rapkin, B. & Portenoy, R.K. (2000). The measurement of symptoms in children with cancer. *Journal of Pain and Symptom Management, 19*(5): 363-377. Reprinted with permission.

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Module 7
Figure 5: MEMORIAL SYMPTOM ASSESSMENT SCALE (PEDIATRICS 7-12)

MEMORIAL SYMPTOM ASSESSMENT SCALE
(PEDIATRICS 7-12)

NAME_____MRN_____

DATE_____

INSTRUCTIONS:

We want to find out how you have been feeling the last 2 days

Use a pencil or crayon to circle your answers

EXAMPLE

Did you have any **pain** yesterday or today?

Yes or No

If Yes

*How much of the time did you have pain?

1-A very short time 2-A medium amount 3-Almost all the time

*How much pain did you feel?

1-A little 2-A medium amount 3-A lot

*How much did the pain bother you or trouble you?

0-Not at all 1-A little 2-A medium amount 3-Very much

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Figure 5 *(Continued)*: MSAS 7-12

MEMORIAL SYMPTOM ASSESSMENT SCALE
(PEDIATRICS 7-12)

1. Did you feel more **tired** yesterday or today than you usually do?

Yes or No

If Yes

*How long did it last?

1-A very short time 2-A medium amount 3-Almost all the time

*How tired did you feel?

1-A little 2-A medium amount 3-Very tired

*How much did being tired bother you or trouble you?

0-Not at all 1-A little 2-A medium amount 3-Very much

2. Did you feel **sad** yesterday or today?

Yes or No

If Yes

*How long did you feel sad?

1-A very short time 2-A medium amount 3-Almost all the time

*How sad did you feel?

1-A little 2-A medium amount 3-Very sad

*How much did feeling sad bother you or trouble you?

0-Not at all 1-A little bit 2-A medium amount 3-Very much

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Figure 5 *(Continued)*: MSAS 7-12

MEMORIAL SYMPTOM ASSESSMENT SCALE
(PEDIATRICS 7-12)

3. Were you **itchy** yesterday or today?

Yes or No

If Yes

*How much of the time were you itchy?

1-A very short time 2-A medium amount 3-Almost all the time

*How itchy were you?

1-A little 2-A medium amount 3-Very itchy

*How much did being itchy bother you or trouble you?

0-Not at all 1-A little 2-A medium amount 3-Very much

4. Did you have any **pain** yesterday or today?

Yes or No

If Yes

*How much of the time did you have pain?

1-A very short time 2-A medium amount 3-Almost all the time

*How much pain did you feel?

1-A little 2-A medium amount 3-A lot

*How much did the pain bother you or trouble you?

0-Not at all 1-A little 2-A medium amount 3-Very much

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Figure 5 *(Continued)*: MSAS 7-12

MEMORIAL SYMPTOM ASSESSMENT SCALE
(PEDIATRICS 7-12)

5. Did you feel **worried** yesterday or today?

Yes or No

If Yes

*How much of the time did you feel worried?

1-A very short time 2-A medium amount 3-Almost all the time

*How worried did you feel?

1-A little 2-A medium amount 3-Very worried

*How much did feeling worried bother you or trouble you?

0-Not at all 1-A little 2-A medium amount 3-Very much

6. Did you **feel like eating** yesterday or today as you normally do?

Yes or No

If No

*How long did this last?

1-A very short time 2-A medium amount 3-Almost all the time

*How much did this bother you or trouble you?

0-Not at all 1-A little 2-A medium amount 3-Very much

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Figure 5 *(Continued)*: MSAS 7-12

MEMORIAL SYMPTOM ASSESSMENT SCALE
(PEDIATRICS 7-12)

7. Did you feel like you were **going to vomit** (or going to throw up) yesterday or today?

Yes or No

If Yes

*How much of the time did you feel like you could vomit (or could throw up)?

1-A very short time 2-A medium amount 3-Almost all the time

*How much did this feeling bother you or trouble you?

0-Not at all 1-A little 2-A medium amount 3-Very much

8. Did you have **trouble going to sleep** the last 2 nights?

Yes or No

If Yes

*How much did not being able to sleep bother you or trouble you?

0-Not at all 1-A little 2-A medium amount 3-Very much

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Figure 5 *(Continued)*: MSAS 7-12

MEMORIAL SYMPTOM ASSESSMENT SCALE
(PEDIATRICS 7-12)

OTHER:

IF YOU HAD ANYTHING ELSE WHICH MADE YOU FEEL BAD OR SICK YESTERDAY OR TODAY, WRITE IT HERE*:

*_____

How much did this bother you or trouble you?

0-Not at all 1-A little bit 2-A medium amount 3-Very much

*_____

How much did this bother you or trouble you?

0-Not at all 1-A little bit 2-A medium amount 3-Very much

Source:

Collins, J.J., Devine, T.D., Dick, G.S., Johnson, E.A., Kilham, H.A., Pinkerton, C.R., Stevens, M.M., Thaler, H.T., Portenoy, R.K. (2002). The measurement of symptoms in young children with cancer: The validation of the Memorial Symptom Assessment Scale in Children aged 7-12. *Journal of Pain and Symptom Management, 23*(1): 10-16. Reprinted with permission.

APPENDIX

Consent Form (Parent/Carer of Patient <18 years age)

MRD NUMBER: _____

Please read the following statement carefully and tick the correct box corresponding to the statement. If you have trouble understanding any statement, please ask before answering. You can ask the researcher doctor to explain the statements as many times as you like.

1. I was provided the information sheet before signing the consent and I have read and understood the purpose and terms of the study. Anything that was not clear has been explained to me in simple language and I am satisfied with the explanation.

YES NO

2. I have understood the purpose of this study and the risks/ benefits of participating in the study have been explained to me.

YES NO

3. It has been explained to me that my participation in the study is completely voluntary and I have the right to withdraw from the study at any time without having to provide a reason

YES NO

4. I have also understood that no matter what choice I make (to participate or not) will not have any effect on the treatment or the support my child is receiving for the treatment.

YES NO

5. I understand that results of this study will be presented at conferences and published in journals where my child's and my identity will remain anonymous.

YES NO

6. I consent to participate in this study and understand that the information I give will be for confidential use in the study.

YES NO

7. I do not give up any of my legal rights by signing this consent form.

YES NO

_____ _____

Name of the Patient Patient's signature

_____

Date

If illiterate

A literate witness must sign (if possible, this person should be selected by the participant and should have no connection to the research team) Participants who are illiterate should include their thumb print as well.

I have witnessed the accurate reading of the consent form to the potential participant, and the individual has had the opportunity to ask questions, confirm that the individual has given consent freely.

Name of witness _____

AND

Thumb print of participant _____

Signature of witness _____

Date _____

(DD/MMM/YYYY)

Assent Form (For children aged 12 to 18 years)

MRD NUMBER: _____

Pain is a relatively common problem among cancer patients, particularly those with advancing disease. Although pain killers remain the primary method of treating cancer-related pain, behavioural interventions including relaxation therapy, hypnosis, cognitive-reappraisal techniques, visual imaging, and self-hypnosis also improve the management of cancer pain. Those undergoing chemotherapy also face fear of having the side effects of chemotherapy.

Thus, this study had been formatted to study the effects of psychological interventions in pain management and fear of side effects of chemotherapy on patients who are/have been under treatment for cancer. This will help healthcare workers to understand more about the effect of the psychological interventions on children like you and will help to plan appropriate treatment for other children who can benefit from it.

We will collect information about your illness from your medical records, rating the pain experienced by you and the fear of side effects of chemotherapy experienced pre and post the session. You can say "no" it you don't wish to take part in the study. No one will be upset with you and nothing bad will happen.

If you agree to participate, please sign below

Signature of the Child _____

Date _____

Statement by the researcher/person taking consent

I have accurately read out the information sheet to the parent of the potential participant, and to the best of my ability made sure that the person understands the study.

I confirm that the parent was given an opportunity to ask questions about the study, and all the questions asked by him/her have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

A copy of this Informed Consent Form has been provided to the parent or guardian of the participant

Name of Researcher/person taking the consent _____

Signature of Researcher/person taking the consent _____

Date: _____

An Informed Assent Form will _____ OR will not _____ be completed. (required for age 12-18 years).

अनुमति फार्म (मरीज़ / माता-पिता / देखभालकर्ता <18 साल)

MRD NUMBER: _____

कृपया निम्नलिखित बयान को ध्यानपूर्वक पढ़ें और बयान के अनुसार सही बॉक्स पर टिक करें। यदि आपको किसी भी बयान को समझने में परेशानी होती है, तो कृपया उत्तर देने से पहले पूछें। आप शोधकर्ता चिकित्सक से कह सकते हैं कि वे जितनी बार चाहें उतने बार बयान करें।

1. मुझे, सहमति पर हस्ताक्षर करने से पहले, सूचना पत्र प्रदान किया गया था और मैंने अध्ययन के उद्देश्य और शर्तों को पढ़ा और समझा है। जो कुछ भी स्पष्ट नहीं था वह मुझे सरल भाषा में समझाया गया है और मैं स्पष्टीकरण से संतुष्ट हूं।

हाँ / नही

2. मैंने इस अध्ययन के उद्देश्य को समझा है और अध्ययन में भाग लेने के जोखिम / लाभों को मुझे समझाया गया है।

हाँ / नही

3. यह मुझे समझाया गया है कि अध्ययन में मेरी भागीदारी पूरी तरह से स्वैच्छिक है और मुझे बिना कारण बताए किसी भी समय अध्ययन से पीछे हटने का अधिकार है।

हाँ / नही

4. मैं यह भी समझ गया हूं कि मैं चाहे जो भी चुनाव करूं (भाग लेने या न), इलाज पर उसकाकोई प्रभाव नहीं पड़ेगा या मेरे बच्चे को उपचार के लिए सहायता मिल रही है।

हाँ / नही

5. मैं समझता हूं कि इस अध्ययन का परिणाम सम्मेलनों में प्रस्तुत किया जाएगा और उन पत्रिकाओं में प्रकाशित किया जाएगा जहां मेरा बच्चा और मेरी पहचान गुमनाम रहेगी।

हाँ / नही

6. मैं इस अध्ययन में भाग लेने के लिए सहमत हूं और समझता हूं कि जो जानकारी मैं देता हूं वह अध्ययन में गोपनीय उपयोग के लिए होगी।

हाँ / नही

7. मैं इस सहमति फॉर्म पर हस्ताक्षर करके अपने किसी भी कानूनी अधिकार को नहीं छोड़ता।

हाँ / नही

मरीज़का नाम मरीज़ के हस्ताक्षर

_____

तिथि : _____

अगर अनपढ़

एक साक्षर गवाह को हस्ताक्षर करना चाहिए (यदि संभव हो तो, इस व्यक्ति को प्रतिभागी द्वारा चुना जाना चाहिए और अनुसंधान टीम से कोई संबंध नहीं होना चाहिए)। जो प्रतिभागी निरक्षर हैं, उन्हें अपना अंगूठा प्रिंट भी शामिल करना चाहिए।

मैंने संभावित प्रतिभागी को सहमति फॉर्म के सटीक पढ़ने को देखा है, और व्यक्ति को सवाल पूछने का मौका मिला है, पुष्टि करें कि व्यक्ति ने स्वतंत्र रूप से सहमति दी है।

गवाह के नाम : _____

तथा

प्रतिभागी के हस्ताक्षर : _____

गवाह केहस्ताक्षर : _____

तिथि : _____

(दिनांक / माह / वर्ष)

अनुमति फॉर्म (12 से 18 वर्ष की आयु के बच्चों के लिए)

MRD NUMBER: _____

कैंसर के रोगियों में दर्द एक आम समस्या है, विशेष रूप से वे जो बीमारी को बढ़ाते हैं।हालांकि दर्द निवारक कैंसर से संबंधित दर्द का इलाज करने का प्राथमिक तरीका है, व्यवहार संबंधी हस्तक्षेपजैसे कि विश्राम चिकित्सा, सम्मोहन, संज्ञानात्मक-पुनर्संरचना तकनीक, दृश्य इमेजिंग, और आत्म-सम्मोहन सहित व्यवहार संबंधी हस्तक्षेप भी कैंसर दर्द के प्रबंधन में सुधार करते हैं।कीमोथेरेपी से गुजरने वालों को कीमोथेरेपी के दुष्प्रभावों का भी डर है।

इस प्रकार, इस अध्ययन को दर्द प्रबंधन में मनोवैज्ञानिक हस्तक्षेपों के प्रभावों और उन रोगियों पर कीमोथेरेपी के दुष्प्रभावों के डर का अध्ययन करने के लिए स्वरूपित किया गया था जो कैंसर के लिए इलाज कर रहे हैं।इससे स्वास्थ्यकर्मियों को आपके जैसे बच्चों पर मनोवैज्ञानिक हस्तक्षेप के प्रभाव के बारे में अधिक समझने में मदद मिलेगी और अन्य बच्चों के लिए उचित उपचार की योजना बनाने में मदद मिलेगी जो इससे लाभान्वित हो सकते हैं।

हम आपके मेडिकल रिकॉर्ड से आपकी बीमारी के बारे में जानकारी एकत्र करेंगे, आपके द्वारा अनुभव किए गए दर्द,कीमोथेरेपी के दुष्प्रभावोंका डर , सत्र का पूर्व और उपरांत का मूल्यांकन करेंगे।यदि आप अध्ययन में भाग नहीं लेना चाहते हैं तो आप "नहीं" कह सकते हैं।कोई आपसे परेशान नहीं होगा और कुछ भी बुरा नहीं होगा।

यदि आप भाग लेने के लिए सहमत हैं, तो कृपया नीचे हस्ताक्षर करें।

बच्चे का हस्ताक्षर : _____

तिथि : _____

शोधकर्ता / सहमति लेने वाला व्यक्तिकाबयान

मैंने संभावित प्रतिभागी के माता-पिता को सूचना पत्र को सटीक रूप से पढ़ा है, और मेरी पूरी क्षमता से यह सुनिश्चित हो गया है कि व्यक्ति अध्ययन को समझता है।

मैं इस बात की पुष्टि करता हूं कि माता-पिता को अध्ययन के बारे में सवाल पूछने का मौका दिया गया था, और उनके द्वारा पूछे गए सभी सवालों का सही और मेरी पूरी क्षमता से जवाब दिया गया है। मैं इस बात की पुष्टि करता हूं कि व्यक्ति को सहमति देने के लिए मजबूर नहीं किया गया है, और सहमति स्वतंत्र रूप से और स्वेच्छा से दी गई है।

इस सूचित सहमति फॉर्म की एक प्रति प्रतिभागी के माता-पिता या अभिभावक को प्रदान की गई है।

शोधकर्ता / सहमति लेने वालेकीनाम : _____

शोधकर्ता / सहमति लेने वालेकीहस्ताक्षर : _____

तिथि : _____

सूचित आश्वासन फॉर्म पूरा_____ होगा या _____ नहीं होगा। (12-18 वर्ष की आयु के लिए आवश्यक है)

ਸਹਿਮਤੀ ਫਾਰਮ (ਮਰੀਜ਼ ਦੀ ਮਾਤਾ / ਪਿਤਾ / ਦੇਖਭਾਲ ਕਰਨ ਵਾਲਾ <18 ਸਾਲ ਦੀ ਉਮਰ) ਹਸਪਤਾਲ ID ਦੇ

MRD NUMBER: _____

ਕ੍ਰਿਪਾ ਕਰਕੇ ਹੇਠਾਂ ਦਿੱਤੇ ਕਥਨ ਨੂੰ ਧਿਆਨ ਨਾਲ ਪੜ੍ਹੋ ਅਤੇ ਕਥਨ ਨਾਲ ਸੰਬੰਧਿਤ ਸਹੀ ਬਾਕਸ ਤੇ ਨਿਸ਼ਾਨ ਲਗਾਓ।ਜੇ ਤੁਹਾਨੂੰ ਕਿਸੇ ਬਿਆਨ ਨੂੰ ਸਮਝਣ ਵਿਚ ਮੁਸ਼ਕਲ ਆਉਂਦੀ ਹੈ, ਤਾਂ ਕਿਰਪਾ ਕਰਕੇ ਜਵਾਬ ਦੇਣ ਤੋਂ ਪਹਿਲਾਂ ਪੁੱਛੋ। ਤੁਸੀਂ ਖੋਜਕਰਤਾ ਡਾਕਟਰ ਨੂੰ ਜਿੰਨੀ ਵਾਰ ਚਾਹੋ ਬਿਆਨਾਂ ਦੀ ਵਿਆਖਿਆ ਕਰਨ ਲਈ ਕਹਿ ਸਕਦੇ ਹੋ।

1. ਮੈਨੂੰ ਸਹਿਮਤੀ 'ਤੇ ਦਸਤਖਤ ਕਰਨ ਤੋਂ ਪਹਿਲਾਂ ਜਾਣਕਾਰੀ ਸ਼ੀਟ ਪ੍ਰਦਾਨ ਕੀਤੀ ਗਈ ਸੀ ਅਤੇ ਮੈਂ ਅਧਿਐਨ ਦੇ ਉਦੇਸ਼ ਅਤੇ ਸ਼ਰਤਾਂ ਨੂੰ ਪੜ੍ਹਿਆ ਅਤੇ ਸਮਝਿਆ ਹੈ। ਜਿਹੜੀ ਵੀ ਚੀਜ ਸਪੱਸ਼ਟ ਨਹੀਂ ਸੀ ਉਸ ਲਈ ਮੈਨੂੰ ਸਰਲ ਭਾਸ਼ਾ ਵਿੱਚ ਸਮਝਾਇਆ ਗਿਆ ਹੈ ਅਤੇ ਮੈਂ ਇਸ ਵਿਆਖਿਆ ਨਾਲ ਸੰਤੁਸ਼ਟ ਹਾਂ। * ਹਾਂ * ਨਹੀ

2. ਮੈਂ ਇਸ ਅਧਿਐਨ ਦੇ ਉਦੇਸ਼ਾਂ ਨੂੰ ਸਮਝ ਗਿਆ ਹਾਂ ਅਤੇ ਅਧਿਐਨ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਦੇ ਜੋਖਮਾਂ / ਫਾਇਦਿਆਂ ਬਾਰੇ ਮੈਨੂੰ ਸਮਝਾਇਆ ਗਿਆ ਹੈ। * ਹਾਂ * ਨਹੀ

3. ਇਹ ਮੈਨੂੰ ਸਮਝਾਇਆ ਗਿਆ ਹੈ ਕਿ ਅਧਿਐਨ ਵਿਚ ਮੇਰੀ ਭਾਗੀਦਾਰੀ ਪੂਰੀ ਤਰ੍ਹਾਂ ਸਵੈਇੱਛਤ ਹੈ ਅਤੇ ਮੈਨੂੰ ਬਿਨਾਂ ਕਾਰਨ ਦੱਸੇ ਬਿਨਾਂ ਕਿਸੇ ਵੀ ਸਮੇਂ ਅਧਿਐਨ ਤੋਂ ਪਿੱਛੇ ਹਟਣ ਦਾ ਅਧਿਕਾਰ ਹੈ। * ਹਾਂ * ਨਹੀ

4. ਮੈਂ ਇਹ ਵੀ ਸਮਝ ਲਿਆ ਹੈ ਕਿ ਕੋਈ ਫ਼ਰਕ ਨਹੀਂ ਪੈਂਦਾ ਕਿ ਮੈਂ ਆਪਣੀ ਚੋਣ (ਭਾਗੀਦਾਰ ਹੋਣ ਜਾਂ ਨਾ) ਦੀ ਚੋਣ ਨਾਲ ਇਲਾਜ ਜਾਂ ਕੋਈ ਸਹਾਇਤਾ ਜੋ ਮੇਰੇ ਬੱਚੇ ਦੁਆਰਾ ਇਲਾਜ ਲਈ ਪ੍ਰਾਪਤ ਕਰ ਰਿਹਾ ਹੈ ਤੇ ਕੋਈ ਪ੍ਰਭਾਵ ਨਹੀਂ ਪਏਗਾ।

* ਹਾਂ * ਨਹੀ

5. ਮੈਂ ਸਮਝਦਾ / ਸਮਝਦੀ ਹਾਂ ਕਿ ਇਸ ਅਧਿਐਨ ਦੇ ਨਤੀਜੇ ਕਾਨਫਰੰਸਾਂ ਵਿਚ ਪੇਸ਼ ਕੀਤੇ ਜਾਣਗੇ ਅਤੇ ਰਸਾਲਿਆਂ ਵਿਚ ਪ੍ਰਕਾਸ਼ਤ ਕੀਤੇ ਜਾਣਗੇ ਜਿਥੇ ਮੇਰੇ ਬੱਚੇ ਅਤੇ ਮੇਰੀ ਪਛਾਣ ਗੁਮਨਾਮ ਰਹੇਗੀ।

* ਹਾਂ * ਨਹੀ

6. ਮੈਂ ਇਸ ਅਧਿਐਨ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਸਹਿਮਤ ਹਾਂ ਅਤੇ ਸਮਝਦਾ ਹਾਂ ਕਿ ਜਿਹੜੀ ਜਾਣਕਾਰੀ ਮੈਂ ਦਿੰਦਾ ਹਾਂ ਉਹ ਅਧਿਐਨ ਵਿਚ ਗੁਪਤ ਵਰਤੋਂ ਲਈ ਹੋਵੇਗੀ। * ਹਾਂ * ਨਹੀ

7. ਮੈਂ ਇਸ ਸਹਿਮਤੀ ਫਾਰਮ ਤੇ ਦਸਤਖਤ ਕਰਕੇ ਆਪਣੇ ਕਾਨੂੰਨੀ ਅਧਿਕਾਰਾਂ ਵਿਚੋਂ ਕਿਸੇ ਨੂੰ ਵੀ ਨਹੀਂ ਛੱਡਦਾ।

* ਹਾਂ * ਨਹੀ

_____ _____ ਰੋਗੀ

ਰੋਗੀ ਦੇ ਦਸਤਖਤ ਦਾ ਨਾਮ _____

ਤਾਰੀਖ਼ ਜੇ ਅਨਪੜ੍ਹ ਹੈ ਇਕ ਸਾਖਰ ਗਵਾਹ ਨੂੰ ਹਸਤਾਖਰ ਕਰਨੇ ਚਾਹੀਦੇ ਹਨ (ਜੇ ਸੰਭਵ ਹੋਵੇ ਤਾਂ, ਇਸ ਵਿਅਕਤੀ ਨੂੰ ਭਾਗੀਦਾਰ ਦੁਆਰਾ ਚੁਣਿਆ ਜਾਣਾ ਚਾਹੀਦਾ ਹੈ ਅਤੇ ਖੋਜ ਟੀਮ ਨਾਲ ਉਸਦਾ ਕੋਈ ਸੰਬੰਧ ਨਹੀਂ ਹੋਣਾ ਚਾਹੀਦਾ) ਹਿੱਸਾ ਲੈਣ ਵਾਲੇ ਅਨਪੜ੍ਹ ਹਨ ਜੋ ਆਪਣੀ ਅੰਗੂਠਾ ਨਿਸ਼ਾਨ ਵੀ ਸ਼ਾਮਲ ਕਰਨੇ ਚਾਹੀਦੇ ਹਨ।ਮੈਨੂੰ ਸੰਭਾਵੀ ਭਾਗੀਦਾਰ ਲਈ ਸਹਿਮਤੀ ਫਾਰਮ ਦੀ ਸਹੀ ਪੜ੍ਹਨ ਦਾ ਗਵਾਹ ਹੈ, ਅਤੇ ਵਿਅਕਤੀਗਤ, ਸਵਾਲ ਪੁੱਛਣ ਲਈ ਇਹ ਪੁਸ਼ਟੀ ਕਰੋ ਕਿ ਵਿਅਕਤੀ ਨੂੰ ਖੁੱਲ੍ਹ ਕੇ ਸਹਿਮਤੀ ਦੇ ਦਿੱਤੀ ਹੈ ਮੋਕਾ ਹੈ।ਗਵਾਹ ਦਾ ਨਾਮ _____

ਅਤੇ ਭਾਗੀਦਾਰ ਦਾ ਅੰਗੂਠਾ ਨਿਸ਼ਾਨ _____

ਗਵਾਹ ਦੇ ਦਸਤਖਤ _____ ਤਾਰੀਖ਼ _____
(ਡੀਡੀ / ਐਮ ਐਮ ਐਮ / ਵਾਈਵਾਈ)

ਸਹਿਮਤੀ ਲੈਣ ਵਾਲੇ ਖੋਜਕਰਤਾ / ਵਿਅਕਤੀ ਦੁਆਰਾ ਬਿਆਨ ਮੈਂ ਸੰਭਾਵੀ ਭਾਗੀਦਾਰ ਦੇ ਮਾਪਿਆਂ ਨੂੰ ਜਾਣਕਾਰੀ ਸ਼ੀਟ ਨੂੰ ਸਹੀ ਨਾਲ ਪੜ੍ਹਿਆ ਹੈ, ਅਤੇ ਮੇਰੀ ਪੂਰੀ ਯੋਗਤਾ ਨਾਲ ਇਹ ਸੁਨਿਸ਼ਚਿਤ ਕੀਤਾ ਹੈ ਕਿ ਵਿਅਕਤੀ ਅਧਿਐਨ ਨੂੰ ਸਮਝਦਾ ਹੈ।

ਮੈਂ ਇਸ ਗੱਲ ਦੀ ਪੁਸ਼ਟੀ ਕਰਦਾ ਹਾਂ ਕਿ ਮਾਪਿਆਂ ਨੂੰ ਅਧਿਐਨ ਬਾਰੇ ਪ੍ਰਸ਼ਨ ਪੁੱਛਣ ਦਾ ਮੌਕਾ ਦਿੱਤਾ ਗਿਆ ਸੀ, ਅਤੇ ਉਸ ਦੁਆਰਾ ਪੁੱਛੇ ਸਾਰੇ ਪ੍ਰਸ਼ਨਾਂ ਦਾ ਸਹੀ ਅਤੇ ਮੇਰੀ ਯੋਗਤਾ ਦੇ ਉੱਤਰ ਲਈ ਉੱਤਰ ਦਿੱਤਾ ਗਿਆ ਸੀ। ਮੈਂ ਪੁਸ਼ਟੀ ਕਰਦਾ ਹਾਂ ਕਿ ਵਿਅਕਤੀਗਤ ਨੂੰ ਸਹਿਮਤੀ ਦੇਣ ਲਈ ਜ਼ਬਰਦਸਤੀ ਨਹੀਂ ਕੀਤੀ ਗਈ ਹੈ, ਅਤੇ ਸਹਿਮਤੀ ਆਜ਼ਾਦ ਅਤੇ ਸਵੈਇੱਛਤ ਤੌਰ ਤੇ ਦਿੱਤੀ ਗਈ ਹੈ।

ਇਸ ਸੂਚਿਤ ਸਹਿਮਤੀ ਫਾਰਮ ਦੀ ਇੱਕ ਕਾਪੀ ਭਾਗੀਦਾਰ ਦੇ ਮਾਪਿਆਂ ਜਾਂ ਸਰਪ੍ਰਸਤ ਨੂੰ ਪ੍ਰਦਾਨ ਕੀਤੀ ਗਈ ਹੈ

ਸਹਿਮਤੀ ਲੈਣ ਵਾਲੇ ਖੋਜਕਰਤਾ / ਵਿਅਕਤੀ ਦਾ ਨਾਮ _____

ਸਹਿਮਤੀ ਲੈਣ ਵਾਲੇ ਖੋਜਕਰਤਾ / ਵਿਅਕਤੀ ਦੀ ਦਸਤਖਤ _____

ਤਾਰੀਖ਼: _____

ਇੱਕ ਜਾਣੂ ਰਹਿਤ ਅਸਾਮੀ ਫਾਰਮ _____ ਜਾਂ ਪੂਰਾ ਨਹੀਂ ਕੀਤਾ ਜਾਏਗਾ।(ਉਮਰ 12-18 ਸਾਲਾਂ ਲਈ ਜ਼ਰੂਰੀ ਹੈ)।

ਅਸੈਂਸਟ ਫਾਰਮ (12 ਤੋਂ 18 ਸਾਲ ਦੇ ਬੱਚਿਆਂ ਲਈ) ਹਸਪਤਾਲ ID ਦੇ ਆਖਰੀ 4 ਅੰਕ _____

ਦਰਦ ਕੈਂਸਰ ਦੇ ਮਰੀਜ਼ਾਂ ਵਿਚ ਇਕ ਮੁਕਾਬਲਤਨ ਆਮ ਸਮੱਸਿਆ ਹੈ, ਖ਼ਾਸਕਰ ਉਨ੍ਹਾਂ ਲੋਕਾਂ ਵਿਚ ਜੋ ਬਿਮਾਰੀ ਨਾਲ ਅੱਗੇ ਵਧਦੇ ਹਨ। ਹਾਲਾਂਕਿ ਦਰਦ ਵਿਨਾਸ਼ਕ ਦਵਾਈਆਂ ਮੁਖ ਤਰੀਕਾ ਹੈ- ਕੈਂਸਰ ਦਰਦ ਇਲਾਜ ਕਰਨ ਦਾ,ਰਵੱਈਏ ਦੀਆਂ ਰੁਕਾਵਟਾਂ ਜਿਸ ਵਿੱਚ ਆਰਾਮ ਦੀ ਥੈਰੇਪੀ, ਹਿਪਨੋਸਿਸ, ਬੋਧਿਕ-ਮੁੜ ਪ੍ਰਾਪਤੀ ਤਕਨੀਕ, ਵਿਜ਼ੂਅਲ ਇਮੇਜਿੰਗ, ਅਤੇ ਸਵੈ-ਹਿਪਨੋਸਿਸ ਵੀ ਕੈਂਸਰ ਦੇ ਦਰਦ ਦੇ ਪ੍ਰਬੰਧਨ ਵਿੱਚ ਸੁਧਾਰ ਕਰਦੇ ਹਨ। ਜਿਹੜੇ ਕੀਮੋਥੈਰੇਪੀ ਕਰਵਾ ਰਹੇ ਹਨ ਉਹਨਾਂ ਨੂੰ ਕੀਮੋਥੈਰੇਪੀ ਦੇ ਮਾੜੇ ਪ੍ਰਭਾਵਾਂ ਦੇ ਡਰ ਦਾ ਵੀ ਸਾਹਮਣਾ ਕਰਨਾ ਪੈਂਦਾ ਹੈ।

ਇਸ ਤਰ੍ਹਾਂ, ਇਸ ਅਧਿਐਨ ਨੂੰ ਦਰਦ ਪ੍ਰਬੰਧਨ ਵਿਚ ਮਨੋਵਿਗਿਆਨਕ ਦਖਲਅੰਦਾਜ਼ੀ ਦੇ ਪ੍ਰਭਾਵਾਂ ਅਤੇ ਅਧਿਐਨ ਕਰਨ ਲਈ ਫਾਰਮੈਟ ਕੀਤਾ ਗਿਆ ਸੀ ਜੋ ਕੈਂਸਰ ਦੇ ਇਲਾਜ਼ ਅਧੀਨ / ਰਹੇ ਮਰੀਜ਼ਾਂ ਤੇ ਕੀਮੋਥੈਰੇਪੀ ਦੇ ਮਾੜੇ ਪ੍ਰਭਾਵਾਂ ਦੇ ਡਰ ਹਨ। ਇਹ ਹੈਲਥਕੇਅਰ ਕਰਮਚਾਰੀਆਂ ਨੂੰ ਤੁਹਾਡੇ ਵਰਗੇ ਬੱਚਿਆਂ 'ਤੇ ਮਨੋਵਿਗਿਆਨਕ ਦਖਲਅੰਦਾਜ਼ੀ ਦੇ ਪ੍ਰਭਾਵਾਂ ਬਾਰੇ ਵਧੇਰੇ ਸਮਝਣ ਵਿਚ ਸਹਾਇਤਾ ਕਰੇਗਾ ਅਤੇ ਦੂਜੇ ਬੱਚਿਆਂ ਲਈ ਉਚਿਤ ਇਲਾਜ ਦੀ ਯੋਜਨਾ ਬਣਾਉਣ ਵਿਚ ਸਹਾਇਤਾ ਕਰੇਗਾ।

ਜੋ ਇਸ ਤੋਂ ਲਾਭ ਲੈ ਸਕਦੇ ਹਨ। ਅਸੀਂ ਤੁਹਾਡੇ ਮੈਡੀਕਲ ਰਿਕਾਰਡਾਂ ਤੋਂ ਤੁਹਾਡੀ ਬਿਮਾਰੀ ਬਾਰੇ ਜਾਣਕਾਰੀ ਇਕੱਤਰ ਕਰਾਂਗੇ, ਤੁਹਾਡੇ ਦੁਆਰਾ ਅਨੁਭਵ ਕੀਤੇ ਗਏ ਦਰਦ ਦੀ ਦਰਜਾਬੰਦੀ ਕਰਾਂਗੇ ਅਤੇ ਕੀਮੋਥੈਰੇਪੀ ਦੇ ਮਾੜੇ ਪ੍ਰਭਾਵਾਂ ਦੇ ਡਰ ਨਾਲ ਤਜਰਬੇ ਤੋਂ ਪਹਿਲਾਂ ਅਤੇ ਸੈਸ਼ਨ ਤੋਂ ਬਾਅਦ ਪੋਸਟ ਕਰਾਂਗੇ। ਤੁਸੀਂ "ਨਹੀਂ" ਕਹਿ ਸਕਦੇ ਹੋ ਇਹ ਤੁਸੀਂ ਅਧਿਐਨ ਵਿਚ ਹਿੱਸਾ ਨਹੀਂ ਲੈਣਾ ਚਾਹੁੰਦੇ. ਕੋਈ ਵੀ ਤੁਹਾਡੇ ਨਾਲ ਪਰੇਸ਼ਾਨ ਨਹੀਂ ਹੋਵੇਗਾ ਅਤੇ ਕੁਝ ਵੀ ਬੁਰਾ ਨਹੀਂ ਹੋਵੇਗਾ।

ਜੇ ਤੁਸੀਂ ਹਿੱਸਾ ਲੈਣ ਲਈ ਸਹਿਮਤ ਹੋ, ਤਾਂ ਹੇਠਾਂ ਦਸਤਖਤ ਕਰੋ ਬੱਚੇ ਦੇ

ਦਸਤਖਤ _____

ਤਾਰੀਖ਼ _____